

**MANAGING
KNOWLEDGE TO
BUILD TRUST IN
GOVERNMENT**



United Nations

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**United Nations Department of Economic and
Social Affairs**

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KNOWLEDGE TO
BUILD TRUST IN
GOVERNMENT**



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FOREWORD

Governments enabled with ICT tools can be more transparent and more responsive to the needs of citizens and enterprises; more democratic and participatory; and more efficient. This transformation will require new approaches to every aspect of government, from organizational structures and operating practices to personnel systems and service delivery models. E-government provides a vision and a strategy for creating an environment for the transformation of government activities by applying e-business methods to the public sector. E-Government's ultimate objective is to provide a viable framework to make public services high quality, accessible and convenient. E-Government, in other words, aims to leverage the knowledge of public organizations to improve the provision of services.

As part of its ongoing effort, the workshop on Managing Knowledge to Build Trust in Government was organized to exchange knowledge and practices worldwide, to challenge current thinking and bring to light best practices that cut across geographical boundaries, and to develop Knowledge Management strategies that leverage human capital and leadership. The workshop took place in connection with the 7th Global Forum on Reinventing Government, 28-29 June 2007, in Vienna, Austria.

It is hoped that the findings in this Final Report of the workshop will further contribute to advancing innovative approaches to implementing knowledge management that leads to increasing trust in government

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BACKGROUND AND KEY FINDINGS AND POLICY OUTCOMES

Ms. Haiyan Qian, Mr. Michael Mimicopoulos, Mrs. HuiYuen Yum

Background

The workshop was jointly organized by UNDESA in partnership with the Ministry of Government Administration and Home Affairs (MOGAHA) of the Republic of Korea and the International Institute of Administrative Sciences (IIAS). The workshop's objective was to encourage discussions on promising approaches and key issues that need to be addressed to promote effective knowledge management (KM) within government, with particular emphasis on the overall theme of this Forum, which was to build trust in government.

KM in government refers to the role of government in regulating network infrastructure, ensuring effective competition between providers, promoting universal accessibility, creating a legal and fiscal framework within which a knowledge economy can prosper, and building customer and user confidence in the security and reliability of the networks that underpin the knowledge economy. In their efforts to provide public value to citizens, governments throughout the world face a number of challenges. These challenges range from IT planning, to security and privacy issues. Governments need to provide funding and adequate physical infrastructures in a rapidly changing technological environment. They need to retain and retrain staff and provide leadership and managerial structures. They are confronted with problems related to existing IT infrastructure and interoperability issues. They face the challenge of reducing the overall operational cost structure of services that they provide. In short, the implementation of knowledge management (KM) involves innovation and reformation for organizations. KM implementation therefore, requires not only substantial investment, but also changes the implementing organization's culture and structure. The real dividends of the information age will be a retrained workforce, higher-quality decision-making that goes on when managers are better informed, faster response rates to citizen inquiries and transactions, and better service delivery with increased transparency, accountability, and inclusion.

The workshop started with a presentation which overviewed knowledge management trends in the public sector. Through an interactive process, participants reviewed issues relating to an enabling environment. In the second session, workshop participants discussed good practices and common lessons learnt based on case studies and country experiences in setting up IT systems for e-government. In the third session, UNDESA outlined its future work program which focuses on assisting countries in building and enhancing existing ICT-led KM capacities in government.

Key Findings and Policy Outcomes

1. Enabling Environment Issues

This session was devoted to discussing overview concepts on KM and enabling environment issues, such as leadership and managerial issues; institutional and regulatory framework issues; IT infrastructure connectivity and systems issues; human resources issues that leverage human-intellectual capital within governmental organizations, including the dissemination and sharing of important information that promotes creativity and innovation within and between employees; and funding and other financial issues. KM is a key strategy central to information sharing and access to the public sector by the government's partners. There is opportunity for developing nations to use KM as a key driver towards increasing public sector productivity and building trust in government.

Sub-theme 1: Institutional and Regulatory Framework Issues

Globalization and liberalization may have brought to the forefront the issue of a pervasive declining trust in government by citizens. This statement is not to imply any cause and effect relationship, but merely to suggest that through globalization, the public's awareness of the worldwide phenomenon of a declining trust in government has increased. It is also instructive to note that GDP growth is high when people trust in one another. At the same time, downsizing, outsourcing and the emergence of private public partnerships have transformed ICTs into a strategic resource, especially in a KM context. Knowledge is the new "commodity" to be captured and exploited. The proposal is for a "Smart/Re-regulating State".

Governments are moving towards an enhanced involvement of citizens in policy making. Various efforts in providing an institutional and regulatory framework that facilitates and promotes public participation are underway. One case study which exemplifies participative processes is a governmental public opinion poll centre in Egypt. The aim of the centre is to increase citizens' participation, strengthening the principle of citizenship rights and supporting the democratization process. The challenges it faces extend beyond technical challenges to more complicated social ones, including maintaining respondents' cooperation in a culture that has long been cautious in revealing its true opinions regarding government policies and decisions. As the centre is funded by the government, and the government is always distrusted by the people, there is always doubt on the centre's objectivity and independence. Changing a culture that has long been prevailing is not an easy task. More polls would be dedicated to evaluating government policies and actions, therefore giving the opportunity for what is called "citizen governance". More publicity would stress on the importance of people's participation in public polls. The center would continue publishing all polling results, so as with time it would gain the desired level of trust that would enable the centre to achieve its objectives.

Sub-theme 2: IT Infrastructure and Interoperability Issues

ICT is not a cure all for the development of developing countries. However, it can play a significant supporting role. In 2004, the World Bank lent more than U.S. \$1 billion to fund IT projects in support of government transformation initiatives in developing countries. By the bank's own estimates, more than 80 percent of all their funded projects include some form of IT component. Over half of these projects suffered some form of failure, ranging from late and over-budget delivery of planned systems to outright cancellation of projects. A set of principles covering IT Governance, Architecture, and Procurement, driven by strong economic imperatives and advances in technology can increase the success of e-government projects and deliver significant efficiency and economic gains. Governance covers *inter alia* the internal management structures and processes to make both long-term and day-to-day IT management decisions. One of the goals of good governance is to make best use of a set of limited resources (money and skilled labor) to deliver maximum benefit to the business sector as its needs evolve over time. Architecture is the set of standards and technologies that provide the foundation for the delivery of IT-based solutions for business. Good architecture ensures cost-effective, reliable, and secure delivery of IT-based business solutions. Good architecture also maximizes flexibility by ensuring that as the needs of the business sector change over time these needs can be serviced as quickly and effectively as possible. Procurement is the set of processes by which the resources required to meet the organization's IT needs are acquired. Good procurement practices are designed to maximize cost effectiveness and flexibility for the organization.

A connected world offers huge opportunities for the public sector in all of these areas. This new world favors a more collaborative and flexible approach to getting things done and provides a platform for empowerment, choice, and personalization. Public sector organizations can build a new kind of relationship with citizens, putting skills and resources directly at their disposal and enabling them to play a much greater role in public policy. They can also harness the "power of us" and pull people together to create public value in new ways. The emergence of the connected world — a distributed network of small pieces, loosely joined — offers the possibility of transforming the public sector, changing the role of government, and enabling citizens to be more actively involved in shaping services and public sector decision making. At its heart, government is still about creating the policy,

technology, and organizational infrastructure that delivers services, trust, and accountability. The question is not whether technology replaces politicians and parliaments, but how technology can support the larger task of renovating the public realm and enabling citizens to participate in more open and meaningful debate and decision making.

Managing and leveraging knowledge within and across public administrations has become a critical skill for government agencies in the 21st century. Public agencies must successfully address the main KM challenges, i.e. in capturing, organizing, sharing, distributing and exploiting their knowledge assets. An enabler to KM in e-government is the use of semantic technologies, which would allow information access and could facilitate attention management due to information overload. Semantic technologies are defined as software technologies that allow the meaning of, and associations among information to be known and processed at execution time. Semantic technologies help solve the problems of application and data interoperability, improved search, discovery and content provisioning in knowledge-centric systems and dynamic integration across distributed systems. Semantic technologies are driving the next generation of the Web, the Semantic Web, “a machine-understandable web of “smart data” and automated services that amplify the Web far beyond current capabilities”. Semantic technologies can be used to support agility within the back-office processes of public administrations and to facilitate the development of self-adaptive front-office processes. Semantic technologies have the potential to solve many of the interoperability and search problems in e-government and hence pave the way towards knowledge-enhanced government institutions.

Sub-Theme 3: Leadership and Managerial Issues

Erosion of citizen’s trust in government due to rampant corruption at various levels in the government is an area of serious concern for developing countries and development agencies. A well-planned e-government strategy can build a more efficient, accountable and transparent government. If planned in consultation with representation from key stakeholders, e-government applications can rebuild citizen trust in government, by improving service delivery, reducing corruption and empowering citizens to participate in advancing good governance. Based on a study of ten projects in India and Chile, after the introduction of electronic service delivery systems, corruption was significantly reduced. In addition, the following enabling environment is required to facilitate the implementation of anti-corruption initiatives. Commitment of political elites (including adequate financial resources) is of key importance to the success of all government anticorruption programs. A legal framework that supports free access to information is also required. Criminal laws must penalize specific forms of corruption as well as attempted corruption. Clear and known procedures that facilitate the reporting of wrongdoing and provide protection for “whistleblowers” can assist the detection of individual cases of misconduct. Providing universal access through the Internet, promoting literacy, fostering people’s participation in governance can also generate widespread debate around significant issues of public concern.

Information is one of the most valuable resources of government. In fact, the government has a monopoly on many types of information. Government managers, however, are finding that the information needed to plan, make decisions, and act is often held outside their own organizations, and is collected for widely different purposes and maintained in disparate formats. As a consequence, governments around the world are increasingly turning to information sharing as a strategy for maximizing the value of information in providing services and responding to problems. New practices are emerging at all levels; from town governments creating performance-based management capability by sharing information between departments such as police and highway; to state and provincial level efforts to coordinate public safety; to national and cross-national efforts to respond to public health crises. Information sharing allows government managers to work at the same time, with the same information integrated from multiple disparate sources. It has the potential to support the transformation of organizational structures and communication channels among multiple agencies working in different locations. These integration processes often involve new work processes and significant organizational change. They are also embedded in larger political and institutional environments that shape their goals and circumscribe their choices. Gathering, handling, and sharing of information require not only adequate technical capabilities for sharing information across

organizational boundaries and among multiple levels of government, but also executive involvement and strong inter-organizational collaboration skills.

Sub-theme 4: Human Resources Issues

KM is the acquisition and use of resources to create an environment in which information is accessible to individuals and in which individuals acquire, share and use that information to develop their own knowledge, and are encouraged and enabled to apply their knowledge for the benefit of the organization. KM, from the human resource management perspective, is more than just the management of information systems, more than just the management of the interface between people and those systems. Effective knowledge management facilitates the acquisition of knowledge by individuals. It encourages them to apply their knowledge for the benefit of the organization so that competitive advantage and service excellence are achieved. The direction is towards policies that respect and recognize the requirements of knowledge workers as individuals, and towards human resource development activities that support the changing managerial role and promote an understanding of organizational culture. Typically, policies are designed to facilitate differing 'lifestyle choices', through actively articulating the organizational values, supporting involvement and respecting diversity. Success will be seen in creating a culture that supports the sharing of knowledge and information, creates fluid organizational boundaries and focuses, on the public sector, on bringing resources together creatively to deliver social outcomes.

The perception of a trustworthy government would be enhanced by providing the citizens with quality services, maintaining a quick and adequate response to their feedback, implementing effective policies and procedures, as well as upholding transparency and low levels of corruption in the government. All of these activities require a highly skilled workforce with a compatible person-job fit and person-organization fit. Employees, who are satisfied with their job and the organization, are more likely to be committed and contribute more to their job. By making them experts in their job through good leadership, managerial style as well as encouraging them to gain more knowledge, these employees will be more willing to share their knowledge and expertise with their peers as well as retain the knowledge in the organization. Managing the knowledge of employees and existing knowledge within the organization is therefore important to make sure that gaps in knowledge are not overlooked and filled, as well as avoiding mistakes or errors. Moreover, by utilizing the knowledge of committed employees efficiently and effectively, the government would be able to offer quality services to the people. Improved services would subsequently enhance the people's satisfaction with the services offered which would ultimately lead to an increased trust in government.

Sub-theme 5: Funding and Financial Issues

Effective funding for e-government is a big challenge that all governments face. Government must develop an effective funding strategy and integrate it into its annual budget process. This funding must cover not only funds for development but also for operations, maintenance and upgrading of e-government systems. In addition, effective funding strategies should be closely linked with collaboration strategies among the agencies so as to promote cross-agency e-government initiatives. Government direct funding for e-government remains fundamental at the moment. However, when e-government projects become more marketable, funds can be obtained from private sector partners. Such an arrangement benefits both the private sector and government. On the one hand, government can accelerate its pace of informatization and provide better services to civil society without spending too much taxpayers' money. On the other hand, private funding partners can benefit from a large market share to substantially increase revenue. With the Build-Own-Operate model, a private company is granted the right to develop, finance, design, build, own, operate, and maintain e-government projects. The private sector partner owns the project outright and retains the operating revenue risk and all of the surplus operating revenue in perpetuity. The Build-Operate-Transfer model allows private developers to design, finance, construct, and operate revenue-producing public projects, and then turn them over to the community at the end of an agreed payback period. The Public Private Partnership model requires a sustainable relationship to be developed across the public, private and other sectors. Links with ICT companies and central or local government agencies are important for

the development of technical infrastructures, systems and services. Relationships with other associate organizations for distribution of government services are also keys to succeeding.

Multiple forms of KM investments are required inside government and broadly across society. In public private partnerships, a critical and shared knowledge dimension to such partnership management is a central determinant of success or failure. This requires effective information and knowledge management mechanisms that must be built into the governance model for shared financing and risk. The collaborative governance model with joint bodies of planning and review is needed to adjust the partnership model to ensure benefits to both sector partners. A useful concept for measuring the impacts of KM lies in shifting from return on investment to value on investment. The usage of a balanced scorecard approach is used to capture both financial and non financial performance impacts as well as the relational strength of stakeholder engagements that are equally important in determining public sector performance. Measures of both investments and returns for KM must be devised to adequately assess the internal cognitive capacities of governmental organizations as well as the collective intelligence and combined governance performance of all stakeholders.

Conclusions and Recommendations on Enabling Environment Issues

KM concepts and tools have been tried and tested in the private sector. KM is also becoming a key enabler of competitiveness in Government. Government organizations are knowledge based organizations and KM enables governments to formulate policies with increased transparency and trust. KM can also deliver effective services by maximizing productivity in terms of process, time and cost.

The workshop confirmed that there is a great need to convert massive information available into good knowledge which would enable governments to formulate policies and deliver effective services with increased transparency and trust in government. The regional and local dimensions, aside from the national one, are also important. In Europe, for instance, they constitute 70% of the total. Yet, 30% of Europe's population do not and will not do e-government. That 30% is the most dependent on government. As governments cannot choose their customers, there is a change in mentality taking place, with governments viewing citizens and businesses as customers. Integration of back office systems is also required in order to provide a seamless service delivery to the citizens and businesses. There is limited use of newer technologies for social networking as rules and practices for such usage have not been established. Finally, the issue of measurement was deemed to be extremely difficult and complicated, but OECD is working on developing measurement and practice.

Aside from investing in IT technologies, there must also be investments in human capital to facilitate the acquisition of knowledge by individuals. KM tools such as Communities of Practice, Best Practice Transfers and the Apprentice model are beginning to become popular in terms of facilitating the sharing of knowledge. Creating a culture that supports the sharing of knowledge and citizenship participation in policy making is also important in bringing resources together to deliver services to the citizens. Introduction of incentives to share information across organization boundaries could be one example. Executive involvement and strong inter-organizational collaborative skills are also key success factors.

Multiple forms of funding are available to finance KM projects. Government funding and traditional cost justification of KM systems remains fundamental in the case of developing countries at the moment, but governments at least on the European continent have closed the book on the funding issue by integrating it into their general budget structure. Private funding partners who may be benefiting from a larger market share with increasing revenue also bring greater value to the citizens through faster and better services.

2. Case Studies and Lessons Learned

This session was devoted to seeking good practices and common lessons learned from international and country experiences in setting up IT systems for e-government development, and drawing on case studies on the development of government integrated IC- led KM.

Case Study 1: Enhancing Trust in e-Voting through Knowledge Management: The Case of the UAE

The United Arab Emirates' society has grown comfortable with the ubiquitous spread of information and communication technologies. Despite repeatedly ranking high in terms of e-government readiness and social acceptance of ICTs, there were doubts that the government's decision to push for using e-voting in the first elections held in the country's history might be crossing the boundary of social acceptance of technology. KM can play an important role in widening society's acceptance in e-government processes such as e-voting, by increasing transparency, thus enhancing trust in government. Achieving a certain level of trust in government is one prerequisite for introducing an e-voting system. This has to be coupled with achieving a certain level of social acceptance of ICT by society. Both factors are prerequisites of e-voting in developing countries. The lessons learnt include approaching the project like another government service implementation. ICT has facilitated the e-voting process and has made it more secure and much faster.

Case Study 2: Achievements in Knowledge-based Administration and Future Directions for the Republic of Korea

The President's strong leadership has been inducing a shift from system-oriented knowledge management to a 'knowledge-based administration' which is closely connected to administrative processes. Knowledge-based administration is a creative and systematic undertaking by the government to enhance policy quality and administrative services through knowledge activities. The public will have stronger trust in a government that engages in interactive communications. Various tools were introduced. These include a business process management system to transform work processing methods from a person-centered to a system and knowledge-centered process; Total Quality Management (TQM) to ensure systematic quality management encompassing the entire policy making to prevent policy failures and enhance policy effect; online discussion and learning communities to enhance quality of government policies; and knowledge networks for the exchange of knowledge with outside organizations to enhance the quality of public service through knowledge sharing. The Republic of Korea is proposing the establishment of a Global Community of Practice to build a systematic foundation for global cooperation.

Case Study 3: Public Information Network as Computing and E-Government Infrastructure in Vietnam

Public Internet Access Development at the national level in developing countries must have at least four components: infrastructure, public access points, public information network, and training to guarantee the utilization of the invested facilities. The Public Information Network is a cooperative environment for government agencies, local governments and businesses to provide information content services to serve the community. Among the numerous valuable on-line services, the program can facilitate a large grid computing infrastructure to improve the national computing power. In this way, a developing country can have equal opportunities to develop the advanced scientific research projects and services, which require high performance and still not affordable computation facilities. One key lesson learnt is to ensure support from citizens and content provision besides focusing on building of infrastructure.

Case Study 4: Knowledge Management and Trust in Government: Lessons from South Africa

KM through e-government is institutionalized in South Africa across all three governmental spheres in the country, and is progressing well according to various assessments so far. The constraints identified are technical and implementation-related. The Government's e-government program envisions four consecutive stages. The program is still largely stuck in the first stage of gradually increasing electronic information provision online, but recent progress has been made at lower

governmental levels towards the second interactive and responsive communication capability between the government and citizen. Beyond that, there is a third transactional completion stage and a fourth transformation consolidation stage with full online availability of all facets of public services delivery. The South African experiences and good practices indicate that hi-tech solutions can be applied successfully in order to facilitate, and maybe even fast-track positive developmental outcomes. This case study also illustrates that a lack of general literacy is not necessarily an impediment to e-literacy and e-learning. Effective electronic KM requires the availability of accurate, reliable and timely quality information about such operations, in order to maximize transparency which is a core ingredient of social trust in government. South African legislation enacted since 1994 has attempted to enlarge the scope of transparency in the affairs of the public sector and to strike a balance between the provision of access to official information and the preservation of confidentiality where disclosures would not be in the public interest. The lesson to be drawn from South Africa is the urgency of adopting general literacy and specialized computer literacy programs which can reduce the digital gap between a developing country and the rest of the world.

Case Study 5: Knowledge Management as Strategy for Recovering Trust in Government: The Mexican Experience

The Mexican Federal Government has implemented different initiatives for transiting to a learning government. These include the Government Innovation Network, Public Servant eLearning Portal, Public Information Portal, Transparency Portal, Citizen Participation and Petition portals, etc. The challenges include designing an implementation strategy that considers not only the resource management, but also the necessary changes in structure, processes and culture of public organizations. Another challenge is the coordination and cooperation among the different government agencies; amongst the three government levels for achieving common objectives and scale economies and the design of incentives for a better use and increased impact of the KM projects.

Case Study 6: Role of Knowledge Management in e-Procurement: Italy's Experience

Knowledge Management requires the coordination of different strategies such as providing continuous assistance and guidance to economic operators before and after a contract is awarded; accompanying public authorities in reassessing their needs while helping them reorganize their internal purchasing processes and contributing to the professional debate on the economic and technological aspects of e-procurement. Italy's national e-procurement portal is not only a platform for transactions, but also a source of information on tenders, tender documentation, training events and workshops. The e-marketplace also provides a new channel of interactions especially for local public authorities and Small and Medium Enterprises. The account management unit is set up to support Public Authorities through daily one-to-one interactions. Assistance to users is provided through joint working groups and free training courses on the use of new e-procurement tools through a network of more than 120 training and information desks all over Italy.

Case Study 7: Knowledge Management and e-Government in Brazil

Brazil is still in the early stages of applying knowledge management techniques in government. To realize the potential of knowledge management and e-government in general, a higher level of political priority for e-government and the intensive use of information and communication technologies (ICTs) as part of a broader strategy of socio-economic development are needed. Strong leadership from the President of Brazil and state governors is critical to realizing synergies and achieving returns to scale. Since ICTs are enablers – using them effectively requires strong leadership and cultural change. The *e-Brasil* project is designed to raise awareness of the benefits of such an e-development strategy among political leaders and to build a broad base of political support for such an approach. The project involves a network of over 60 specialists, mostly Brazilian but includes some from other countries. The project includes the development of a strategic communication campaign and academic programs to support the development of “e-leaders” knowledgeable in both public administration and ICTs. It also funds projects at the municipal, state and federal level which can attract financial support from Brazilian and international sources.

Case Study 8: Ecosystem of Policy-related Knowledge in the Republic of Korea

Policy-related knowledge refers to a body of knowledge that administrative or legislative or any other branches of government make use of when making decisions on public affairs. This intellectual infrastructure can help maximize efficiency and effectiveness of governance. The Republic of Korea can promote diversity of its ecosystem for policy-related knowledge by diversifying knowledge producers and strengthening the role of knowledge producers as knowledge coordinators. Knowledge coordinators refer to individuals or organizations that can suggest solutions after considering all the opinions related with the issues. A suggestion is to establish a consultative body. In order to promote interaction, the ecosystem for policy-related knowledge should be open to outsiders. For this to happen, it needs to expand exchanges with overseas knowledge ecosystems via joint research. The ecosystem of policy related knowledge can run smoothly when the government and knowledge consumers have faith in the knowledge provided by the specialists. In this regard, the government needs to further open its information to the public, expand database systems and improve the policy related knowledge management systems.

Case Study 9: E-Government knowledge in EU (Including Czech Experiences)

Eris (European Regional Information Society Association) is a group comprising of 45 regional governments in the EU sharing experiences in the implementation of e-Government. There is a need for a new kind of social interactions for capacity building, enabling organizational change in regions. A multi-disciplinary approach is required to support these organizations. A portal has been set up to share best practices including economic measures such as return on investment and value of e-Government projects. The objective is to increase public value and reduce costs of implementation. One key success factor is the promotion of organizational changes required due to new ways of working. Another requirement is to provide education and training for all public administrative staff on ICT and tools for e-participation.

Case Study 10: Knowledge Transfer in E-Government in the EU

Competitions and awards to identify best practices which can be used as a model within the EU are valuable for networking, motivation, awareness building and knowledge exchange. However, even though the concepts under-lying good practice solutions can be copied, their implementation takes place in a certain context. The context is shaped by the prevailing forces and institutional traditions of a given administrative culture. In transferring knowledge several problems can arise. These include: selecting suitable model project cases; implementing organizational learning; using several transfer mechanisms and providing a framework for deliberating feasibility. The cases submitted for the 2005 Awards demonstrate that: 1. The momentum for transformation of public services is still increasing; 2. Re-organization is at least as important as new technology; 3. It is impossible to make sure that citizens and businesses are benefiting; and 4. The quantification of benefits is possible. The take away lesson from this case study is that countries can learn lessons from each other and can reap the benefits of scale from adopting common approaches across borders.

3. UNDESA's Role in KM in Government

In this session, UNDESA presented four types of activities to improve government KM capacities. The results of all these activities are fed into a knowledge base for use by all. The activities supported include advocacy events such as *the Global Forum on Reinventing Government* and *Public Service Awards on e-Government*; in addition, analytical research, advisory services and global networks are also provided to facilitate the development of KM capacities in the developing countries.

Conclusions and Recommendations on Case Studies and UNDESA's Role in KM in Government

The workshop confirmed that the major challenge facing KM implementation is not a technological one but relates to the requirement for the development of a common culture of modernization of public administration. The solution is to use a problem solving approach rather than a mere technological implementation of a portal. The key objective of a knowledge based administration is to focus on achievements of the goals of the government's agencies and improvement in quality of processes and services to the citizens which incorporate the input of citizens. There are differences in approaches in implementing KM between the regional and national governments as national governments look at overall policies, whereas regional governments are responsible for delivering services to the citizens.

The drivers of e-Government projects would include the political head, the IT head and an administration person who controls the purse strings. Publicity and marketing of e-Government services is also required to bring awareness to the citizens. In addition, good e-government services promote themselves.

Various frameworks are available to measure the economic impact of e-Government projects. Various countries have put in place formal measurements and indicators to measure impact and benefits. Communications programs to inform the citizens of these services and measurements have also been introduced.

UNDESA's activities and the knowledge base, especially provided by the UNPAN¹ portal to store the results of the frameworks and good practice greatly facilitate the development of KM capacities of developing countries. The Republic of Korea's proposal to establish a Global Community of Practice to build a systematic foundation for global cooperation is another step forward to share knowledge on KM practices.

All governments have differing goals and priorities. There is no simple answer to the 'correct' model for KM implementations. It would be important to continue deeper studies on KM initiatives. These studies should also look into the achievements of KM and whether productivity and public service delivery have been enhanced and trust in government has increased. All these studies should be shared to enhance global cooperation. The United Nations, through UNPAN and its members and stakeholders worldwide should continue to play an important role in this regard.

¹ United Nations Public Administration Online Network

OVERVIEW OF KNOWLEDGE MANAGEMENT IN THE PUBLIC SECTOR

Mrs. HuiYuen Yum

1. Introduction

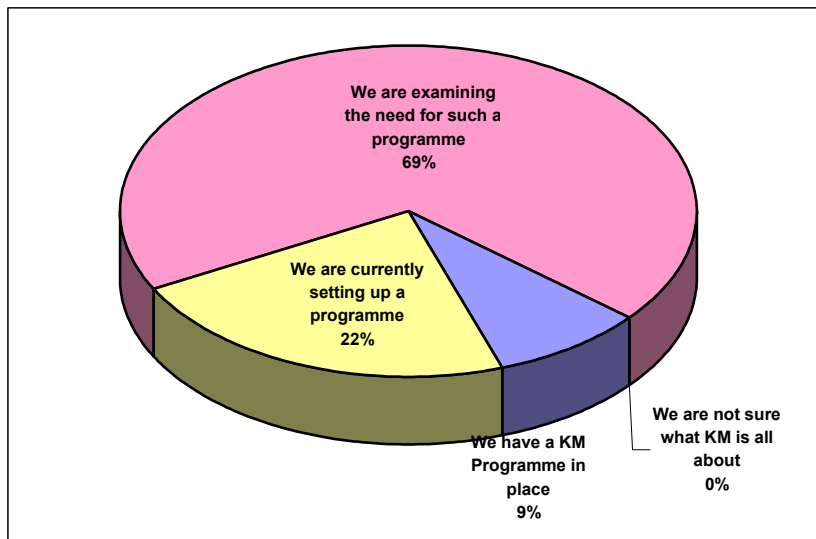
With the explosion of digital connectivity, government agencies all over the world are using ICT applications to increase productivity, improve accountability, enhance transparency and facilitate public sector reform. Improved knowledge management (KM) is essential to governmental agencies at the national, regional or local levels, because governmental organizations are basically knowledge-based organizations. KM has also become one of the initiatives within most countries' e-Government Plans. This paper presents an overview of KM initiatives and trends in the public sector, focusing primarily on developing countries. The paper also includes recommendations for successful KM implementations, by drawing from lessons learned and best practices in published reports of successful public sector KM initiatives.

2. Trends in Knowledge Management

Information on KM initiatives and trends is drawn from a recent survey (NUS 2007) conducted by National University of Singapore, with respondents from the following member nations: Barbados, Brunei, Bulgaria, Cambodia, Cyprus, Egypt, Fiji, Ghana, India, Iran, Jamaica, Jordan, Maldives, Mozambique, Nigeria, Pakistan, Philippines, Romania, Seychelles, Solomon Islands, South Africa, Sri Lanka, St Lucia, Tanzania, Thailand, Trinidad and Tobago, Turkey, Tuvalu, Uganda, Vietnam, Yemen and Zimbabwe.¹

State of KM deployment

Based on the results of the NUS survey, all the respondents are aware of KM and have KM programs in place, are setting the program, or examining the need for such programs.

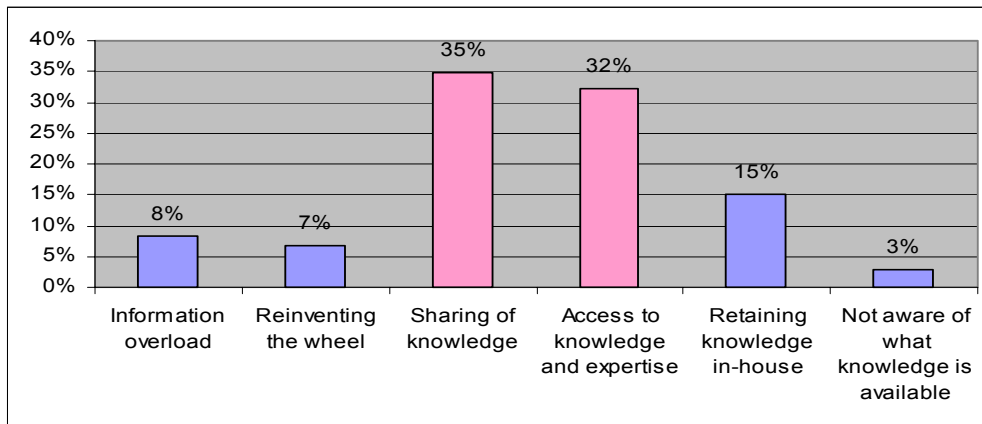


¹ The survey was conducted by the Institute of Systems Science (ISS), National University of Singapore (NUS). The respondents are participants who had attended the Singapore Cooperation Program (SCP) which provides technical assistance to developing countries around the world. The programs conducted by ISS, NUS are the Chief Information Officer Training Program (7-20 Nov 2006), the Use of IT in Public Administration Program (5 – 18 Dec 2006) and the Developing e-Government Strategies Program (5 – 16 Mar 2007). The survey attracted a total of 58 responses from 32 developing countries. The respondents include Deputy Secretaries; directors, heads and chiefs of ministries and agencies, managers, experts, advisors, researchers, scientists and IT professionals.

Similarly, in a OECD survey conducted in 2003 (OECD 2003)², almost half of the organizations surveyed consider KM as one of their top five internal priorities and another half consider it to be one in the next two years or longer.

Goals of KM

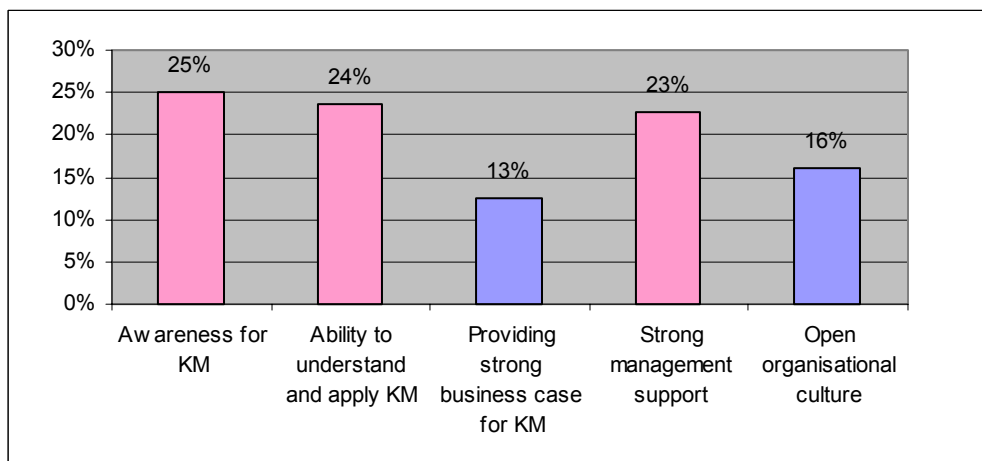
Sixty seven percent of the participants of the NUS survey indicated that the goal stated for KM programs is to either share knowledge or to provide access to knowledge and expertise.



In the OECD survey, concerns for efficiency and productivity stand out as the main motivators for establishing KM practices, with 90% of respondents, while 75% responded that minimizing duplication of efforts between divisions and directorates is a very important factor motivating the establishment of KM practices. Improving transparency and outward sharing of information as well as improving working relations and trust within organizations also rank high among factors motivating the establishment of KM practices for more than 75% of respondents with approximately 50% of respondents considering them as very important factors.

Challenges of KM initiatives

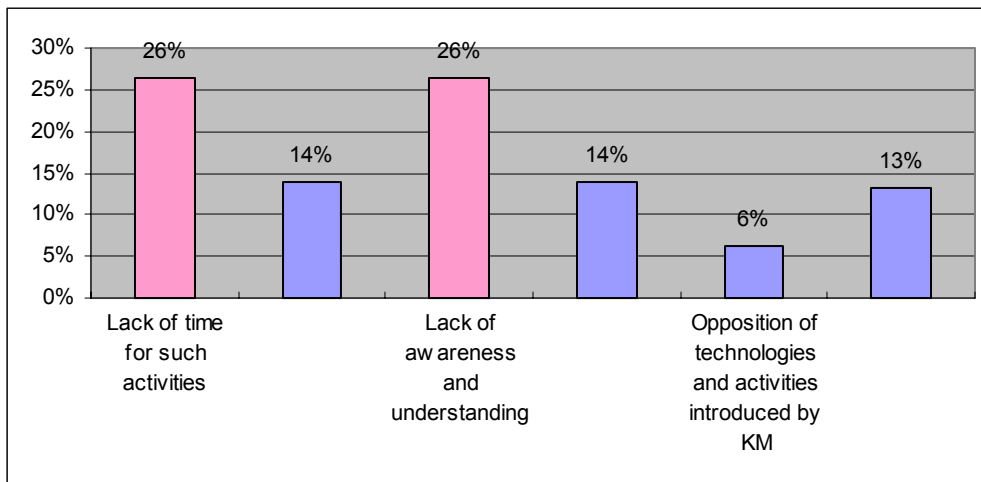
The NUS survey shows that the top three challenges are providing awareness for KM (25%), ability to understand and apply KM (24%) and providing strong management support (23%).



² This was a survey of 20 member countries conducted by the Organization for Economic Cooperation and Development in 2003. The survey attracted 168 respondents from countries including Belgium, Canada, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, the Republic of Korea, Mexico, New Zealand, Norway, Poland, Portugal, Slovak Republic, Sweden, the United Kingdom and the United States.

Reasons for resisting KM

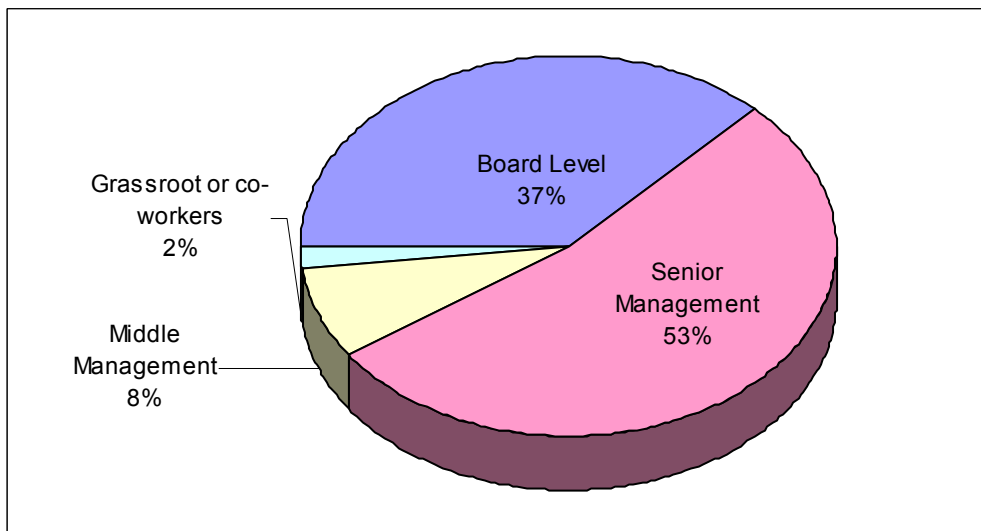
In the NUS survey, lack of time and lack of awareness and understanding are the top 2 reasons for resisting KM initiatives.



Similarly, in the OECD survey, more than 85% of respondents point to lack of time or resources and 78% to the difficulty in capturing employee's undocumented knowledge. Eighteen percent of organizations indicated that the fact that KM is not a priority within the modernization program of their government is one of the factors impeding implementation of KM practices.

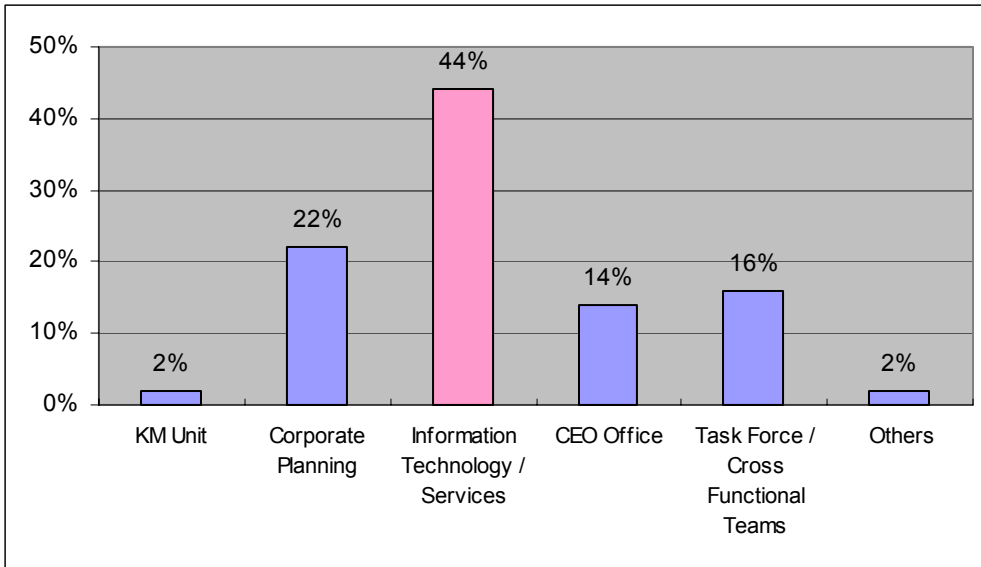
Organizational support for KM

In both the NUS and OECD surveys, the respondents indicated top management support for their KM programs.



Unit tasked to drive KM initiatives

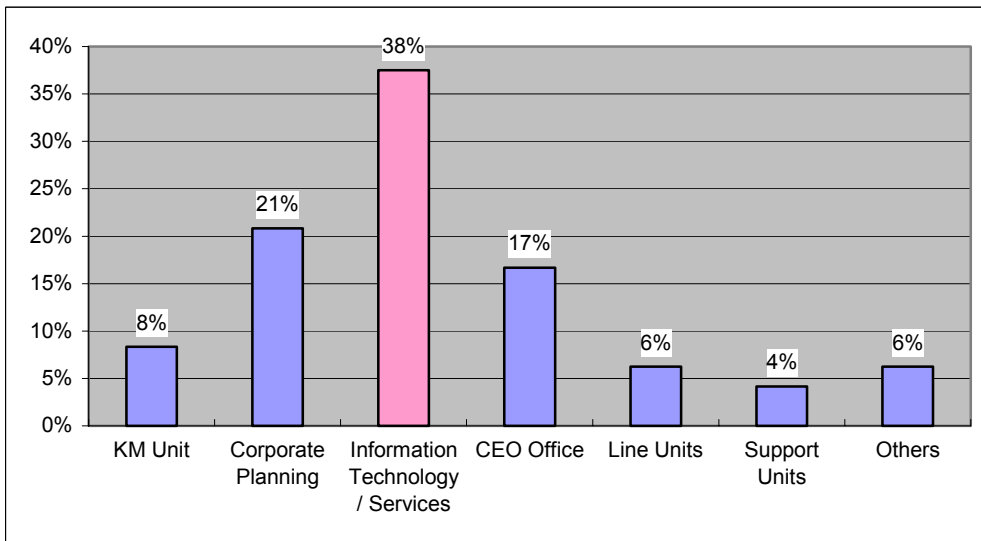
In the NUS survey, 43% of the respondents indicated that the Information Technology/Services group is the unit tasked to drive KM initiatives, followed by the Corporate Planning Group (22%), Cross Functional Teams (16%) and the CEO's Office (14%).



In the OECD survey, half of the organizations have also established central co-ordination units for knowledge/information management, quality groups/communities of practice, knowledge networks and Chief Knowledge Officers, and more than 20% planned to establish them in the next 3 years.

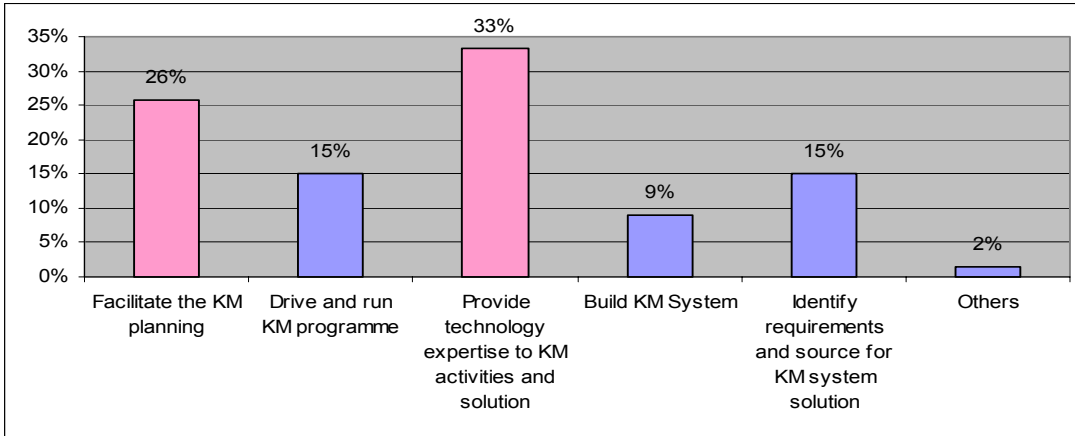
Funding of KM initiatives

In the NUS survey, again the Information Technology/Services group ranked highest as the unit funding the KM initiatives (38%). Other groups that provided the funding included the Corporate Planning (21%) and CEO office (17%).



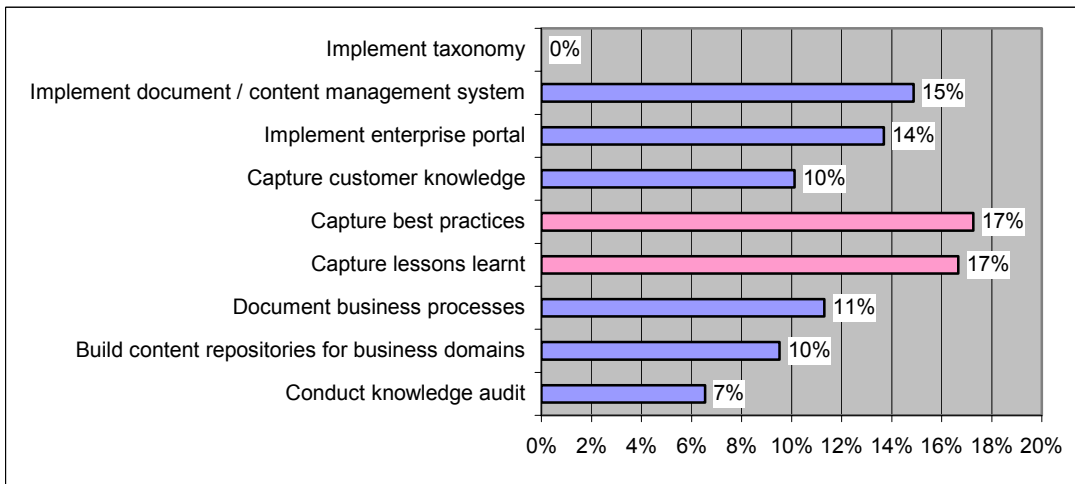
Role of IT in KM

Based on the NUS survey, the key role of the IT/Services group is to facilitate planning of KM initiatives (33%) and to provide technology expertise for KM activities and solutions (26%).



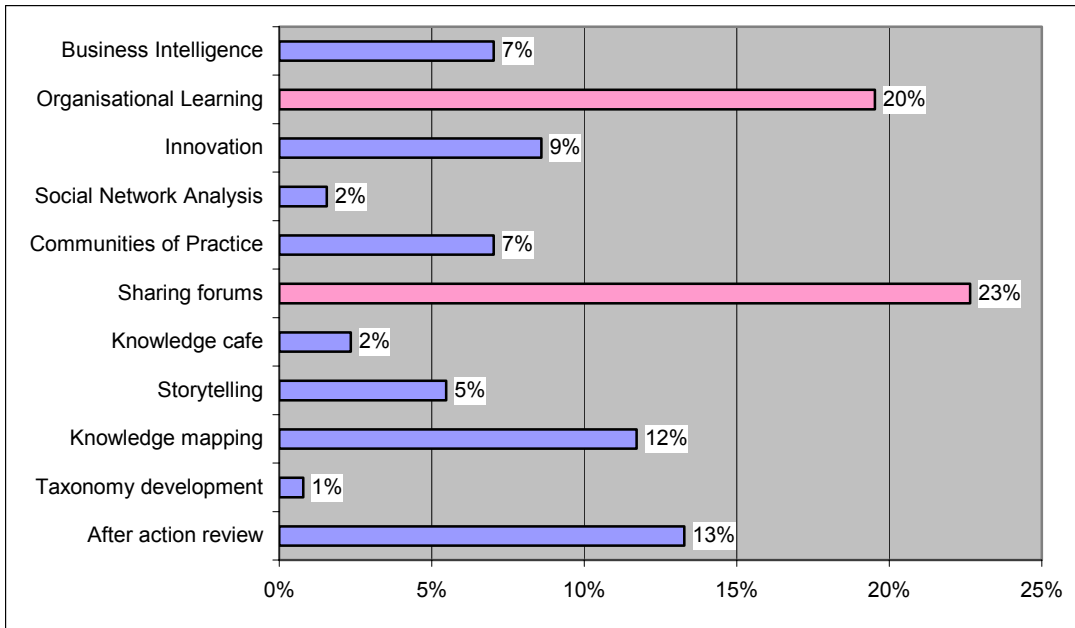
Types of KM activities

The top four KM activities according to the NUS are the capture of lessons learnt (17%), capture best practices (17%), implement document/content management systems (15%) and implement the enterprise portal (14%).



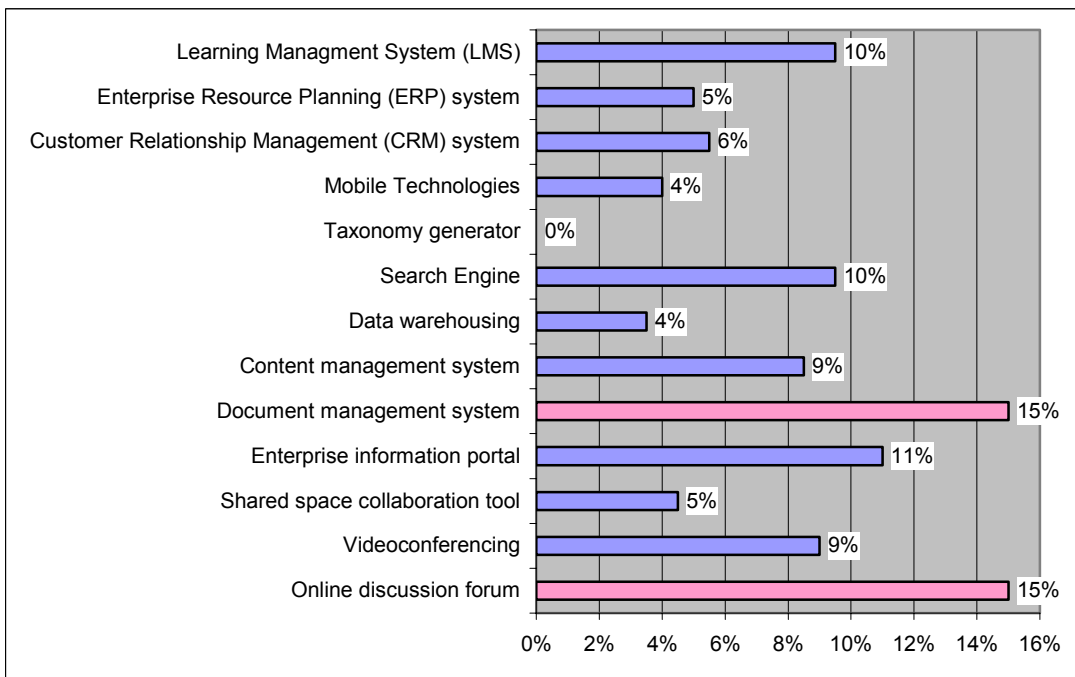
Types of KM techniques

In the NUS survey, the top two techniques used in KM initiatives are sharing forums (22%) and organization learning programs (19%).



Types of KM technologies

Online discussion forums (15%) and document management systems (15%) are the top two technologies being deployed according to the NUS survey.



From the survey data, certain clear trends are emerging:

- KM is a key initiative recognized as central to information sharing and access between public sector agencies and between public sector and the citizens they serve.
- Ownership of KM initiative and its implementation remains largely in the government IT department.
- Barriers to successful KM adoption are largely due to lack of awareness and lack of time. The lack of time can be interpreted as lack of awareness of KM's importance.

These trends point to an opportunity for governments from developing nations to use KM as a key driver towards increasing public sector productivity and building trust in government by focusing on a few key policies and designating the appropriate department to driving these policies into effective implementations.

3. Analysis of KM challenges and its Implications for Policy Options

The main benefit of KM is to maximize productivity in the public sector, while enhancing public service delivery. More specifically, the objectives for KM initiatives include (Riege and Lindsay, 2006):

1. Maximize efficiencies across all public services by connecting silos of information across different levels of government and across borders.
2. Develop new or consolidate outdated systems to improve overall performance and capitalize on a broader, more integrated and easier accessible knowledge base.
3. Improve accountability and mitigating risk by making informed decisions and resolve issues faster, supported by access to integrated, transparent information across all organizational boundaries.
4. Deliver better and more cost effective constituent services such as enhancing partnerships with and responsiveness to the public.

All these objectives lead to access to knowledge and expertise; and sharing of knowledge which are consistent with the survey findings. As a consequence, most KM activities revolve around the capture of best practices and lessons learnt. These activities apply to both practices within the government agencies as well as engagement with the citizens. Government agencies are encouraged to publish and explain all their non-sensitive public policies online. As the public service seeks to be more open, transparent and responsive, it has to improve its ability to engage the public effectively. Public consultation is the process of seeking the views, ideas, concerns and feedback of citizens/stakeholders in developing and implementing public policies and programs. Most countries have launched a central government portal with feedback forums as a means to engage their citizens and employees as one of the first KM activities.

As KM is one of the initiatives within e-Government programs, the challenges for a successful implementation of an e-Government plan would be similar to that for KM programs. These common challenges include (Ndou, 2004):

1. Role of leaders and strategy definition
2. Change management
3. Development of human capital and life long learning
4. Provision of ICT infrastructure
5. Partnership and collaboration
6. Policies and legislation

Role of leaders and strategy definition

Based on the survey results, the developing countries are aware of the potential of KM and are very keen to implement KM initiatives. The results also show that there is senior management support for KM initiatives and in most cases, the IT/services group is driving and funding the KM initiatives. The key challenges include setting up programs to promote awareness and prioritizing the various initiatives within the government. While there are many examples of formal e-Government plans and assistance from various developmental agencies and private sector to set up such plans, there is little documentation of government-wide KM initiatives in the developing countries. One example can be found in Singapore where KM is one program within the island nation's Infocomm Plans (Singapore Government Infocomm Plans)³. The program starts with the provision of education programs for civil

³ The Government's infocomm journey started in the early 1980s with the aim of transforming the Singapore Government into a world-class user of information technology. The Civil Service Computerization Programme automated work functions and reduced paperwork for greater internal operational efficiencies. The late 1990s saw the convergence of information technology and telecommunications which

servants to build awareness of KM and implementation requirements. At the same time, an assistance scheme to nurture good KM ideas, the Knowledge Management Experimentation Program has also been initiated. The next phase of the program has been to develop a KM framework to drive pervasive adoption of KM practices. Clinic sessions have been conducted to disseminate the framework and its implementation. More recently, the KN@Public_Sector program has been implemented, which aims to enhance inter-agency collaboration and to share useful knowledge repositories through the development of inter-agency applications. The potential is to put in place a knowledge sharing process for formulating KM implementation plans for developing countries.

Change management

The stated reason for not embracing KM initiatives is the lack of time or resources. Employee resistance to change is still the biggest barrier to successful change. Change management issues must be addressed as new work practices, new ways of processing and performing tasks are introduced. Change management programs similar to the ones for encouraging adoption of changes from e-Government projects should be introduced. These could include the introduction of incentives for employees to learn and change; and the establishment of well structured plans that embrace employee participation throughout all stages of a change process. Similar programs also need to be put in place to encourage citizen interactions and engagements with the government.

Development of human capital and life long learning

The efficiency of KM is a function of efficient institutional capacity and trained human resources that can disseminate knowledge quickly. Governments need to continually learn in order to remain relevant to the constituents they serve (Nair, 2005). Different KM learning programs have to be put in place. Top managers and sponsors would require basic understanding of how KM can improve the government processes, its integration with the broader goals of e-Government implementation; and implementation requirements, including technical and legislative changes. Programs for educating the civil servants on how to use KM effectively and incorporate its usage into existing government functions are also required.

Provision of ICT infrastructure

As part of their e-Government initiatives, a number of countries have launched their central government portal as a first step to provide easy access and transparent information. News articles published in various issues of Public Sector Technology & Management Magazine gave the following examples. China has launched its central government portal with the objective of promoting transparency and preventing miscommunication between the people and the government. The web site has four sections providing information about government affairs, online services for citizens, enterprises, residents from overseas and interactive communication between the government and citizens. The government of Vietnam has also officially launched its e-government web portal. The site will help build greater trust from local residents in the government by promoting policy transparency and openness, as well as in clarifying the accountability of government agencies. It also provides information on government administration and publishes economic and social reports. The site will help the government agencies to share information and promote the country to foreign investors and visitors from abroad. Kuwait has established a portal to promote transparency and involve citizens in the governance process. The new portal will promote greater awareness of the decisions of the Council of Ministers and enable greater scrutiny by citizens. By publishing subsequent follow-up actions, the portal will also give a boost to accountability.

transformed the concept of service delivery. This paved the way for the launch of the e-Government Action Plan (2000 - 2003) and the e-Government Action Plan II (2003 - 2006). The key objective of the first plan was to roll out as many public services online as possible, while the emphasis of the second plan was to improve the service experience of customers. Today, Singapore is regarded as a leading e-Government in international benchmarking studies. iGov2010 is the Singapore Government's five-year master plan that leverages infocomm to continue to delight its customers and citizens. To achieve this vision, four thrusts have been identified: Increasing Reach and Richness of e-Services; Increasing Citizens Mindshare in e-Engagement; Enhancing the Capacity and Synergy in Government; and Enhancing the National Competitive Advantage.

Besides the central government portal, other technologies deployed include document management systems. Many governments consider document management systems as an essential application to overcome the problems of information accessibility. Another KM solution is the online discussion forum. An example of effective use of online discussion forum as a KM solution is Bangladesh. By using AgriNet Bangladesh, citizens of Bangladesh can exchange their ideas about agriculture; refer to experts' knowledge and access the latest news (Wagner et al, 2003).

One major challenge for the developing countries is the ability and readiness to spend in implementing the required IT infrastructure for KM projects. One potential solution is to find inexpensive solutions for knowledge and information delivery.

Partnership and collaboration

Collaboration and cooperation at local, regional and national levels, as well as between public and private organizations are important to build trust in government. Developing a citizen centre focus for projects can help to identify opportunities for closer technical, service delivery and policy integration. Cross agency teams within the government can help to implement and manage these projects. Public-private partnerships are often used for complex projects in which knowledge from both public and private sectors need to be combined. In Malaysia, the National IT Agenda and the Governance Agenda incorporate the smart partnership model/concept in Malaysia's drive toward achieving a Values-Based Knowledge Society. The goal is to forge a smart partnership between public, private and community sectors (Nair, 2005). Various collaboration models have to be defined to ensure the success of KM programs.

Policies and legislation

Governments have a mandate to maintain their citizens' trust. One key challenge is to respect accepted privacy principles while allowing the benefits of Internet and information flow to citizens. A regulatory framework for enforceable electronic transactions is also required. For example, the Philippines had issued new rules and policies to govern and regulate electronic commerce and interactions including e-Commerce law to provide legal protection to electronic documents (Ndou, 2004). Reviews of existing legislations are also required to ensure successful implementation of seamless service delivery. In Singapore, a Smart Regulation Committee was set up to bring about a facilitative public sector that works as one by changing the mindset of agencies from that of a regulator and controller, to that of a facilitator. It is also about "boundary less behavior" across public agencies - "Many Agencies - One Government - No Boundaries" (PS21).⁴ There are also requirements for international policies for the protection of privacy and recognition of digital signatures.

4. Conclusion

This paper presented an overview of KM initiatives and trends in the public sector, focusing primarily on developing countries. From the survey data, KM is seen as a key initiative recognized as central to information sharing and access between public sector agencies and between the public sector and the citizens they serve. The ownership of KM initiative and its implementation remains largely in the government IT department. Barriers to successful KM adoption are largely due to the lack of awareness and lack of time. The lack of time can be interpreted as lack of awareness of KM's importance. These trends point to an opportunity for governments from developing nations to use KM as a key driver towards increasing public sector productivity and building trust in government by focusing on a few key policies and designating the appropriate department to driving these policies into effective implementations.

⁴ In May 1995, the Singapore Public Service embarked on a movement called Public Service for the 21st Century (PS21) to prepare the Singapore Public Service for the future by Anticipating, Welcoming and Executing Change. PS21 has two basic objectives. The first is to nurture an attitude of service excellence in meeting the needs of the public with high standards of quality, courtesy and responsiveness. The second is to foster an environment which induces and welcomes continuous changes for greater efficiency and effectiveness, by employing modern management tools and techniques, while paying attention to the morale and welfare of public officers.

Based on the analysis of the common issues in KM implementation and the best practices of some successful public sector KM initiatives, the following guidelines are useful:

- A knowledge sharing process is important for formulating KM implementation plans for developing countries.
- Change management programs similar to the ones for encouraging adoption of changes from e-Government projects should be introduced.
- KM learning programs should be instituted.
- IT infrastructure and inexpensive solutions for knowledge and information delivery are important factors.
- Collaboration models between local, regional and national levels, as well as between public and private organizations are useful.
- Legislation and policies for the protection of privacy and recognition of digital signatures should be instituted.

Deeper studies on KM initiatives and how policies can impact KM implementations should be carried out. These studies should also look into the achievements of KM and whether productivity and public service delivery have been enhanced.

Definitions of Knowledge Management Technologies

Content Management System	A system to support the creation, update, publication, translation, archival and retirement of digital information.
Customer Relationship Management System	A system for collecting, storing, analyzing and managing relationships with customer.
Data Warehousing	A main repository of the organization's historical data.
Document Management System	A computer system to track and store electronic documents and/or images of paper documents.
Enterprise Information Portal	A single gateway for users, such as employees, customers and a company's partners to log into and retrieve corporate information, company history and other services or resources.
Enterprise Resource Planning System	A system that integrates all the data and processes of an organization.
Learning Management System	A system that enables the management and delivery of online content to learners.
Mobile Technologies	A cluster of techniques whereby a device can conduct communications without the need for a physical cable to connect it to any other device or network.
Online Discussion Forum	A facility on the Internet for holding discussions and posting user generated contents.
Search Engine	A system to help find information stored on a computer system.
Shared Space Collaboration Tool	Software that enables people to connect or collaborate.
Taxonomy Generator	A set of tools to classify information / knowledge
Video Conferencing	A set of interactive telecommunication technologies which allow two or more locations to interact via two way video and audio transmissions simultaneously.

Source – Adapted from Wikipedia

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PART I ENABLING ENVIRONMENT ISSUES

i. Institutional and Regulatory Framework Issues

INSTITUTIONAL STRUCTURING TO BUILD TRUST IN GOVERNMENT

Dr. Magued Osman

What is encouraging about recent developments in Africa is that the pressure for good governance is no longer coming from one side or the other, but from peoples and leaders alike. The spirit of democratic empowerment is challenging all leaders to live up to the ideals of independence, and to deliver the freedoms, the rights and the opportunities that their peoples deserve.

Kofi Annan

1. Introduction

Since the late eighties and early nineties, the world has been witnessing a paradigm change. A new values system based on empowerment, participation, accountability and transparency is replacing traditional institutional and regulatory frameworks of rule and knowledge management. The early nineties witnessed a revival in demand to “reinvent government” in a way to make it more effective, more democratic, and more transparent (Sharawy, 2001).

The concept of “governance” hence emerged. The United Nations Development Program has defined governance as the exercise of economic, political and administrative authority in managing a country’s affairs at all levels. It embraces the mechanisms, processes and institutions through which citizens and groups articulate their interests, exercise their legal rights, meet their obligations and mediate their differences (UNDP, 1997).

This definition implies that public policies are a result of formal and informal interactions between the different actors in society. Therefore, governance is not only about how government conducts business in its own sphere, but also how it interacts with civil society. It illustrates how well government encourages and facilitates people’s participation, not only in the delivery of services but also in the evaluation and monitoring of government performance.

The achievement of good governance – according to the UNDP definition – requires equitable participation of all stakeholders, so that they influence policy making, setting the policy agenda, and the allocation of resources. It also requires the free flow of information so that transparency and accountability are promoted.

Moreover, good governance is effective and equitable, and it promotes the rule of law. It ensures that political, social and economic priorities are based on broad consensus in society and that the voices of the poorest and the most vulnerable are heard in decision- making over the allocation of development resources.

During the past few years, the Egyptian government has increasingly realized the importance of good governance in making effective and efficient decisions. Various efforts were taken towards providing an institutional and regulatory framework that facilitates and promotes public participation in policy making.

This paper examines the efforts of, The Egyptian Cabinet’s Information and Decision Support Center (IDSC) to instill mechanisms and tools aimed at achieving accountability and transparency. More specifically, the paper highlights the efforts undertaken by the IDSC to enhance public polling

mechanisms as an indispensable strategy towards achieving such goals. In July 2003, IDSC established the Public Opinion Poll Center (POPC) with the aim of increasing citizens' participation, strengthening the principle of citizenship rights and supporting the democratization process.

2. Participation to Build Trust in Government: Institutional Issues

Public opinion polling today can be classified as being a “**Fifth Estate**” because of its growing impact on the formulation of public policies, and in imposing pressures on governments to alter certain decisions and policies. To support and facilitate participative processes and ensure their reliability, the IDSC instituted the POPC, which is considered to be the first specialized governmental public opinion poll center in the Arab world.

The POPC acts as a sensor for public opinion, and has allowed the government to start taking into account citizen's concerns, needs, values, expectations and problems in taking its decisions. On the other hand, citizens are given the opportunity to have their say in diagnosing societal problems, setting the public agenda, and monitoring and evaluating the implementation of public policies.

Since its establishment, the POPC has been eager to be a proactive pioneer in assessing public views to support decision making processes and public policies.

The Center seeks to fulfill a set of objectives including:

- Measuring the Egyptian public opinion to provide decision makers with fast and periodical indicators of public opinion about:
- Local, regional and international political, economic and social issues.
- Laws issued and decisions taken on different issues.
- Enhancing citizens' participation and in turn supporting the democratization process.
- Building public confidence in the government's true intentions in acknowledging and responding to public opinions and suggestions.
- Enhancing the quality of public policy and information transparency.
- Contributing to the quality of microenvironment business context
- (Readiness to all stakeholders' increases market efficiency)

To this end, and to meet its set objectives, the POPC conducts polls in every aspect that directly or indirectly affect citizens' life. Polls conducted not only focus on measuring public opinion on the decisions and policies adopted or to be adopted, but also aim at involving people in setting the government policy agenda. Polls that directly deal with the problems and interests of the citizens are good examples in this regard, as well as polls focusing on problems and priorities of youth.

Measuring public attitudes towards political participation in general or towards participation in the presidential or parliamentary elections in particular is done regularly at the POPC, studying people's motives for participation or for abstaining from participation, so as planned efforts would be exerted towards increasing citizens' participation.

Despite only being recently established, the POPC's use of telephone interviews has ensured the representativeness of its sample size and the systematized collection of data. In this manner, public opinion has contributed to some important policies at the Cabinet level. Different areas were the focus of its operations; incorporating economic issues like foreign exchange policy, prices of some commodities, investment climate, in addition to identifying perspectives on government reform, Cabinet reform, and other political, and social issues.

While working towards achieving its objectives, the POPC is aware of the great contribution it should provide in making the Egyptian government more efficient. Therefore, the POPC is keen on adopting principles of good governance, whether through spreading the concept in society, or through applying those principles in every aspect of its work.

However, it cannot be denied that the POPC is facing many difficulties and challenges, which it is trying to overcome, so that it can fulfill its role more efficiently. One of the main challenges facing the POPC is maintaining respondents' cooperation and decreasing refusal rates, in a culture that has long been cautious in revealing its true opinions regarding government policies and decisions. When it comes to sampling, a lot of challenges appear. One of the most important challenges in this regard is the current methodology and its representation. Telephones are still one of the equipments that signify high income level, therefore representing low income people, is a problem the POPC is working on. Another major challenge is the dependency of the POPC to IDSC, which is a government organization. This dependency decreases the credibility of POPC at the public level

3. Good Governance to Build Trust in Government: Operational Issues

Many of the principles of good governance identified in the introduction are manifested in the objectives of the POPC and in its scope of work.

The POPC contributes to the achievement of one of the most important characteristics of good governance, which is **participation**. This is done by ensuring that the voices of all citizens are heard, regardless of their sex, educational and cultural background or religion. The management of the IDSC, and the POPC, are keen on regularly presenting the results of each poll to the Egyptian prime minister and other high officials, so that public opinion is always taken into consideration while setting policies and taking decisions.

The principle of **participation** is also achieved by the strive of the POPC to advocate for a societal culture that encourages and supports positive participation in public opinion polls, and perceives its importance in sustaining democracy.

Several public opinion polls were conducted to understand people's opinion regarding different policy alternatives, before these policies were adopted. Since the POPC adopts the concept of **transparency**, results of these polls are published whether or not the government adopted the policies chosen by the people. One of these polls was about the preferences between two ways of delivering a government subsidy: an in-kind transfer system or a cash transfer system. Although the government was in favor of the cash transfer system and the public was in favor of the in-kind transfer system, results were published and stimulated major discussions in the media.

Being a government agency did not prevent the POPC from adhering to being **transparent** and objective in providing policy makers with a real reflection of what public opinion thinks about specific policies, irrespectively of whether it is in favor of or against the government. A poll on e-government awareness revealed that people were unaware of the e-services introduced by the government despite the efforts exerted by the government for publicizing these services and the huge cost related to the project. The results of this poll were sent to all concerned policymakers even though this would reflect the failure of the project in achieving its target.

The POPC commitment to the **transparency** principle is central to the principle of **accountability**. The POPC's ability to reflect public opinion trends and attitudes with respect to different government policies provides a vital tool for those who have the right to hold the government accountable, like the parliament and the civil society.

The results of several polls were discussed at the Egyptian parliament, namely: the poll about retrieving the sixth grade in primary schools, the poll about the phenomenon of private tutoring, and the poll about the problem of unemployment.

To promote **accountability**, several polls were conducted to monitor the performance of different government officials. Such polls include: a regular poll on evaluating government performance with special reference to the performance of ministers; another poll was conducted on administrative corruption and its perceived prevalence in the Egyptian society with a sample drawn from each

governorate to capture areas in which corruption is spreading. People's perception regarding government credibility is studied regularly, in which a government credibility index is established so that a trend would be depicted.

Several other polls gave people the opportunity to evaluate many aspects of the government's policies, for example: evaluating the efficiency of the Egyptian administrative system, evaluating the efficiency of the Egyptian government in dealing with several crises and evaluating the police department and the way it deals with the public. Other public opinion polls were conducted by the POPC to evaluate the transportation services and many other public services. A monthly poll is conducted to measure the Egyptian consumers' confidence in the economy, in which an index is constructed to depict the periods when the confidence rate is low and when it is high and how this is affected by the government's policies.

By gauging the needs and priorities of the main stakeholders of public policies, and transferring them to policy makers, the misuse of resources is prevented and policies' outcomes reach those really targeted by them, a thing that promotes the **efficient and effective** design of policies.

An example of how poll results are used to prevent misuse of resources is the public opinion poll on ration cards that was conducted to understand how citizens feel about the removal of some of the rationed goods on the ration cards. In this context, other polls were conducted to evaluate how people perceive government subsidies introduced on goods and services, and whether or not such subsidies are important to people and how well-targeted they are.

One of the main characteristics of an effective government is its **responsiveness** to its citizens' needs and demands while maintaining justice and **equity**. The POPC acts as an efficient mediator in conveying citizens' needs and demands, hence giving the opportunity to the Egyptian government to respond to those needs efficiently, and to target those in need.

The Egyptian government has responded to peoples' demand manifested in several poll results. For example, the government health insurance system was modified, after a poll was conducted to measure people's satisfaction about the system. More basic goods were made available in the market after poll results on the availability of basic goods, revealed that people were complaining of the shortage in some basic goods. The Minister of Information took major decisions regarding several television channels broadcasted by the Egyptian television after several poll results conducted by the POPC revealed the low level of viewing these channels. As a result these channels were shutdown.

Results of a poll conducted by the POPC to understand if people were prepared to change their full-time jobs to part-time in return for half the salary showed that they were in favor of the idea, and therefore a new law 179 of 2005 was implemented to alter specific articles in the Egyptian labor law 47 of 1978. This change allowed male civil servants the opportunity to work part time for a relative percentage of the salary - a privilege that was previously granted to females only.

The government was studying the possibility of implementing a new "Cairo Cab" project, as a new means of transportation, and the POPC conducted a public opinion poll to inform people about the service and its potential fare, in an attempt to understand their feedback and opinions. When the Cairo Cab project was implemented later on, the cab fare was that chosen by the majority of respondents in the poll.

Finally, it's worth mentioning that the POPC builds people's trust in the government by allowing them the opportunity to openly express their opinions, and have their say regarding government policies.

4. Trust in Government: Challenges

As a government agency, the POPC faces challenges that are typical to any institution aiming to create avenues of participation, transparency and accountability. The challenges it faces extend beyond technical challenges to more complicated cultural ones. Since the POPC is funded by the government, and the government is always distrusted by the people, there is always doubt on the POPC's objectivity and independence. And because the POPC pollsters are government employees, a major challenge that the POPC faces is making people speak frankly about and criticize government policies.

As a way of facing those challenges, the POPC was keen on embodying the principles of good governance in its work processes, as it believes that those principles are not slogans, but they are a way of living.

Building mechanisms that would permit the public to recommend and suggest polls to be conducted according to their perception of the problems the society is facing has increased citizens' – who are one of the main POPC stakeholders – **participation** in setting the POPC agenda. The POPC web site calls for people's suggestions for upcoming poll topics.

Seeking to be **responsive** to citizens' demands, the POPC had conducted several polls that were suggested by the people, such as the poll evaluating people's relation with police departments, the poll evaluating the public transportation service, and the poll about citizens' opinion regarding ration cards.

Transparency is also one principle the POPC has adhered to throughout the regular publishing of polls results, whether these results are supporting or opposing public policies. Building mechanisms that support this principle has been a top priority at the POPC. A whole unit was established dedicated for this job. Polls results are published and distributed either electronically through the POPC web site or by e-mails, or as hard copies among the POPC's major target groups.

Press releases in both Arabic and English are sent to the media immediately after each poll, illustrating its major findings. A quarterly newsletter is published and distributed to provide information about the latest polls and explaining in simple words methodologies adopted. The POPC also organizes regular workshops and seminars to discuss its methodology to increase people's awareness, and to continuously improve this methodology.

In the context of consolidating **transparency and accountability**, the POPC is working on forming a board of trustees which will include experts from different fields who don't belong to any political parties and are known for their objectivity and neutrality. The main tasks of the board will be the contribution to the formulation of the POPC agenda, and reviewing the results and methodologies of the polls. The existence of this board will give more credibility to the POPC work as its members have the right to hold the center accountable for whatever they perceive as deviating from the norm. It would also give the POPC the independence needed to ensure people's cooperation and participation in the polls conducted and instill trust in poll results.

5. Conclusion

It is quite clear that the POPC has many achievements in regard to the consolidation of good governance in Egypt during its short life span. As the Egyptian culture doesn't actually favor public participation in general, participation in public opinion polls is low and therefore reduces the possibility of using polls as a tool for governance. The further Egypt moves towards more democracy, the easier the POPC job becomes.

Changing a culture that has been prevailing for such a long time is not an easy task. It requires the collaboration of several actors in the society. As for the POPC, it will continue to work according to

its mission and towards fulfilling its objectives. More polls would be dedicated to evaluating government policies and actions, therefore giving the opportunity for what is called “citizen governance”.

More publicity would stress on the importance of people’s participation in public polls. The POPC will continue publishing all polls results, so as with time it would gain the desired level of trust that would enable it to perform its tasks more efficiently.

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IDEOLOGY, VULNERABILITY AND REGULATION IN THE PRIVATIZED STATE

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Neo-liberalism and globalization constitute an “ideological” attack on the legitimacy and efficacy of sovereign, national governments -- democratic or otherwise. The absence, even the destruction, of trust is central to economically-driven prescriptions. Managerialism/New Public Management provide for solutions to putative government dysfunction.

Building trust in lean agencies/organizations with resilient and often transient workforces is complex. Within Knowledge Management (KM) sensitivities, this paper examines issues of trust in “lean” organizations; vulnerability and regulation in outsourcing and partnerships; and some un-debated issues of the Digital Divide (DD) before outlining some capacities for a “smart” and re-regulating state.

1. Introduction: The Ideologized Governance Environment

There are now more “democratic” governments than ever before and there is more political disillusionment with “democracy” than ever before. Kakabadse et al (2006: 191) note the World Economic Forum 2002 Global Survey which revealed that ‘two-thirds of whom live in a “democracy” do not believe that their country is “governed by the will of the people” (WEF, 2002). This result reveals a ‘dramatic lack of trust in democratic institutions, global and large, national companies as well as NGOs, trade unions and media organizations around the world’. Kakabadse et al (2006: 191) specifically argue that, ‘low trust in democratic processes is due to the globalization, or liberalization of markets, which emerges as antagonistic to domestic systems’ (Friedman, 1999; Franklin, 2003). Further, Liberalization of trade through GATT/WTO, with Neo-liberal recipes pushed by the World Bank and the IMF, have empowered and engaged transnational corporations (Corpocracy) and weakened governments to the point where national economic policies can no longer be decided by elected officials alone but must take into account, if not favour, the interests of huge corporations (Kakabadse et al, 2006: 191).

The Economist (2005:11-12), for example, recently argued for more and other forms of “openness” in the face of emerging “tiredness with Globalization” and trade liberalization – obfuscating the issue of the declining or expanding role of government and regulation in Neo-liberal economies.

Then, also in 2005, Saul, the Canadian critic of globalization, argued the collapse of globalization had begun – that the re-invention of the “world” was occurring. After 35 years of Economic Rationalism (ER), New Public Administration (NPM) and Neo-Liberalism (NL), this was a startling claim and demands some serious consideration.

According to (Saul, 2005:55-56), six shocks led to the emergence of the G7:

- President Richard Nixon’s handling of US financial problems by destroying the Bretton Woods monetary system in 1971 – the US dollar was floated. The raising of American tariffs.
- The failure of GATT, in 1973.
- The 1973 Yom Kippur war leading to the oil embargo and steep oil price rises.
- The 1974 Indian explosion of a nuclear weapon.
- The spread of communist parties in Europe.
- The 1975 defeat of the US in Vietnam.

These six factors, together with others, led to a view that the post-war system had broken down; US power was shrinking; and the “Southern Gradient” (Faux, 2001: 16) was developing in new ways. In the “Northern Gradient”, inflation and depression combined into stagflation and elite powerlessness: a policy vacuum, maybe, an ideological shift, almost certainly.

Globalism was not only the result of the failure of Keynesianism or a reaction to the crises of the 1970s. As implied by Saul (2005), but made explicit by some others, including Kouzmin and Dixon (2006), globalization, from 1971, involved a full-scale ideological and policy “attack” on the legitimacy, sovereignty and capabilities of government by Neo-classical economics and conservative Libertarians – markets could, and should, do much, much better than the state! – a position leading to a collective “amnesia” about the failure of Capitalism in the late 1920s and the possibility of more corporate crises and market failures -- for example, the corporate governance crises in the US and the UK over the last decade.

According to Saul (2005:67-87), the emerging Neo-liberal, ideological “fantasies” saw the emergence of a “Crucifixion Economics”:

- De-regulation being seen as a form of libertarian freedom.
- Privatization was equated with entrepreneurship and innovation, rather than patronage.
- “Rent seeking” and money markets were deemed as being new, “real trade.”
- Size was all that mattered -- mergers and takeovers, not competition or “knowledge”.
- Global corporatism and the “utopia” of unlimited consumption prevail.
- The putative morality of balanced budgets and the “ideologized evil” of public debt carry the day.
- Corporate bankruptcy legally suspends lender and employment rights in favour of restructuring – thus, violating contract law.
- The 1995 creation of the World Trade Organization (WTO).
- The use of children and cheap labour escalates.
- Markets were de-linked from competition, value and need – for example, Wal-mart and Nike.
- Society and the “public domain” were viewed only through the prism of economics.

Saul (2005: 196) put the ideological positioning of the economic over the social/political more succinctly: Globalization, as an ideology, declared itself as a market force for Capitalism and risk. It was spoken for by tenured professors of Economics, and Management, whilst being led by technocrats – private sector bureaucrats, working in joint-stock companies rarely owned by active shareholders – working to reduce competition.

Freidman’s free market assumptions were transposed into a global movement of “Crucifixion economics” as a tool to weaken government, discourage taxes, force de-regulation and entrench private monopolies (Saul, 2005:33) – privatize, privatize became the public-policy mantra!

Saul’s (2005), as well as others, saw evidence of a post-1995 decline in an enthusiasm for globalization:

- The collapse of the Mexican and Latin-American economies.
- The re-emergence of nationalism and the re-assertion of public authority.
- Asian family versus Anglo-American corporate speculation.
- Currency control in Malaysia being vindicated.
- IMF and World Bank policy failures in Asian and Latin American crises.
- The emergence of private monopoly and oligopoly - Jarvis Plc in the UK and Halliburton in the US.
- Convergence being seen as equivalent to vertical integration.
- Abuse of intellectual property/copyright – now extended to 95 years – and the elimination of competition.
- The privatization of public-funded R and D – for example, pharmaceuticals.
- Poor contract management/outsourcing/privatization being, in effect, the distribution of public monies to private profiteering – no reciprocal “re-skilling of agencies” as a strategic offset.
- The debacle of New Zealand’s international sell offs and increasing foreign debt.
- The NZ Finance Minister proselytizing NPM to African economies.
- UK water utilities using public debt for infrastructure renewal.

- The UK Railway debacle, public bailouts and Public-Private Partnership (PPP) failures.
- Global outsourcing of industrial and service-sector jobs – India/China in a global economy.

Adding to this list, Thirlwell (2006:21) argued that the role of the IMF was being undermined by a declining interest in the ‘inter-locking ties of crossborder flows of goods, services and capital’. Further, Thirlwell (2006) argued the importance of other factors:

- A new wave of protectionism (quotas) from developed economies stemming from consequences of economic globalization.
- The future of WTO was being questioned after failures in trade negotiations.
- Emerging barriers to foreign investment – for example, China’s state-owned oil company trying to purchase US UNACOL and Dubai Ports’ attempt to acquire UK’s P and O.
- European governments re-affirming national interest in blocking cross-border mergers.
- The prevalence of rich-country “hypocrisy” in international policy. For example, China’s growth rate was 9.0% and India’s was 7.0%

All of these questions/issues raise policy questions, and under-pin ideological positions, for scrutiny and debate; especially within UN forums focusing on any possible renewed interest in the role of regulation within national economies.

Such policy questions might include:

- Has the time for re-regulation actually come?
- Has “national interest” re-emerged as a policy mandate?
- Why is the public sector in the UK analysed only in Business Schools?
- Is the “public domain” reversing its decline over the decades of Neo-liberalism?
- Is “inclusion” replacing “exclusion” as an economic idiom in the “North/South Gradient”?
- Is the “democratic deficit” beginning to reduce?
- What is the true role of public debt?
- Is private money a corrupting force in the provision of public services?
- Are outsourcing and consultancies out of control?
- Are proponents of globalization now baulking at competition from China and India? – seeking to establish new, protective tariffs?

In any context of managing KM to “(re)build” trust in government, the transitions in governance capacities that have taken place over the last 30 years need outlining and recording as there are many elements of history repeating itself with regard to the claims “market fundamentalists” have been making over this period of time. Questions will be asked about the circumstances under which such a collective “amnesia” about de-regulated, “free markets” have been allowed to prevail.

“Reduced”, “de-skilled”, “hollowed-out” states have emerged. Governments have been restricted in taxing and regulatory capacities at the same time of rising demand for public goods. ‘The former “citizen”, turned “consumer” over [these 35 years] of de-regulation and privatization, is less deferential to the reduced capacities of governments but, nevertheless, surrenders to Neoliberal cybernetizen (Kouzmin and Jarman, 1999) anxieties’ (Kouzmin, 2002: 25) – “shopping” replaces “voting” (Hertz, 2001:8) as the community experience. As Hertz (2001: 12) puts it, ‘until the state reclaims its citizens, the citizens will not reclaim the state’.

2. The Destruction of Trust

Due to economic pressure (permanent unemployment; permanent under-employment; and decline of middle class); changing business needs (shift from products to services; shift to human-based services; focus on core business; cost reduction; and customer focus); demographic changes (female-dominated workforce; ageing workforce; and decline in youth population); organizational dynamics (globalization; minimalist/line organizations; externalized work; demise of traditional organization; and the demise of traditional management); social change (increased affluence; postmaterialistic

values; and emerging leisure society); and technology change (invisible collaboration; virtual companies/teams; global communication/interaction; personal corporate infrastructure; mobility and opaque work domains), the nature of the social contract has fundamentally changed (Korac-Kakabadse, Korac-Kakabadse and Kouzmin, 1998: 140).

Whether there is any increasing or decreasing enthusiasm for Neoliberalism/ globalization and deregulation, the current dynamic in society and in agencies/public organizations, beside some perceived, putative increase in efficiency, carries the serious erosion of the social contract, “public domains” and trust. Especially because of streamlining/downsizing/re-engineering processes, the erosion of trust in the externalized workforce is more visible, as loyalty to organizations disappears and, with the erosion of loyalty, there occurs a further erosion of trust.

As Korac-Kakabadse, Kouzmin and Korac-Kakabadse 1999:11) point out, many social scientists agree on the importance of trust in the conduct of human affairs (Weber, 1922; Blau, 1964: 99; Bok, 1978: 26; Lewis and Weigert, 1985: 968; Zucker, 1986: 56). Golembiewski and McConkie (1975:131) assert that ‘there is no single variable which so thoroughly influences inter-personal and group behaviour as does trust,’ while Hirsch (1978: 78) states that trust is a ‘public good, necessary for the success of economic transactions.’ According to Misztal (1996:1), ‘in modern society, with its complex division of labour, there is a need to economize on trust in persons and confide instead on institutions.’

Although there is widespread agreement in the literature on the importance of trust, there is no universal definition of the concept of trust (Korac-Kakabadse et al, 1999:11). Notwithstanding, scholars from a wide range of disciplines and contexts have arrived at a number of similar conclusions on the concept of trust. ‘All these perspectives have in common the moral value of denial of self-interested benefits to constituents’ (Korac-Kakabadse et al, 1999: 12) – a complete rejection of the egoistical, maximizing assumptions so embedded in Economics. Butler and Cantrell (1984) proposed five dimensions of trust: four moral values – integrity; consistency; loyalty; and openness – and competence, with each dimension being mediated by the position of the actor and context.

How do these moral values configure in any capacity for remorse, regret or the need for restitution within a KM agenda? The moral dimensions of trust in the management literature are focused on leadership/follower or superior/subordinate relationships and the personal characteristics of specific individuals within those relationships.

However, the Neo-conservative ideology of Neo-classical welfare economics under-scores the linking of public agency efficiency to managerial (in)ability, authority and accountability by the adoption of Managerialist, private sector practices (such as strategic planning; re-engineering; customer service; quality assurance; performance management; risk management and, even, accrual accounting), creating what Adams and Ingersoll (1990: 285) described as the “managerial meta-myth”.

Under the influence of this ideology, the lack of institutional integrity and trust is paramount. Trust is replaced by contracts and sanctions. In the economic literature, distrust in management includes managing “principal/agent” relationships; transaction costs; and attributing “rent-seeking” to the personal characteristics of generalized behaviour of others.

According to Kouzmin, Dixon and Korac-Kakabadse (2001:14), Neo-liberal economics has acquired the distinctive distaste for the public sector, which is constantly under suspicion of being inefficient, wasteful and, thus, not giving value for money, because the absence of any automatic “disciplining mechanism” permits “rent-seeking” behaviour (Tullock and Eller, 1994) by bureaucrats, their clients and, even, the politicians who govern them.

The result from this ideologized lack of trust is that public officials/bureaucrats are viewed as deceitful, even dishonest, because of the distortion of information communicated upward so as to promote their own self-interest; making decisions consistent with their own self-interest; and

implementing policy decisions in such a way as to promote their own self interest (Downs, 1967: 77-78).

In essence, Managerialism/NPM expects public managers to improve organizational efficiency, so as to reduce costs, while, at the same time, enhancing organizational performance by meeting competing needs of a variety of stakeholders, within a politico-administrative environment that eschews trust, punishes mistakes and rewards risk-averse behaviour, regardless of the costs and effort involved in avoiding unacceptable outcomes.

By condemning public bureaucracies as the cause of inefficiency and rent seeking, governments are set along destructive paths of action which reduce state capacity and open up traditional government activities to private sector “capture”. The real challenge is to change this culture of risk aversion at all levels, so as to permit some organizational and management trust and innovation to take place.

3. Knowledge Management and “Yes Minister”

In KM terms, just as startling is to understand the origins of the iconic TV series “Yes Minister” (Borins, 1988: pp.12-26). The ideological agenda has now been revealed. The TV script co-author, Anthony Jay (interviewed, and telephone conversations, in late 1987), admitted that:

No one who had interviewed him before recognized Public Choice Theory (PCT) in his thinking. PCT clarifies what motivates Minister Jim Hacker and Secretary Sir Humphrey Appleby. Appleby is the ultimate “rent seeker” – increasing departmental size; seeking autonomy from interference; increasing a personal power base; maximizing income and “perks”; and seeking out honours and retirement sinecures.

Anthony Jay has been a devotee of Friedman’s market fundamentalism and has been a vocal “Thatcherite”. The cult of “Yes Minister” has undermined respect for the public service and government.

Further, “invisible” and ideological assumptions underlying “Yes Minister” constitute the propaganda coup, by the TV series, for ER/ NPM agendas played and re-played year in, year out. This propaganda victory of the late 20th century is paradigmatic nature and a calamity for “public domains”, social capital and “trust” in government.

This on-going propaganda involves the following KM-relevant elements:

- PCT is the application of the behaviourally-dubious “Pareto Optima” outside of deductive economics and within the analysis of government, even voting within democracies.
- Egoistic, maximizing assumptions are applied to voters, politicians and bureaucrats.
- Pessimism about the public-sector, fundamentally, involves the “rent seeking” slur.
- Origins of private-sector “rent seeking” (Berle and Means, 1932/1991) is disguised or forgotten.
- Economistic agendas of balanced budgets and “lean and mean” governments are propagated.
- “North/South gradients” and the norm of 46% of GDP devoted to public-sector expenditure ignored in globalization debates about “convergence”.
- 1986 Nobel Prize in Economic Science went to James Buchanan/PCT not to Anthony Downs – voting does not reflect public interest but utility.
- Political Economy is based on self-interested, utility maximizers.
- A belief in market fundamentalism – political markets and bureaucratic markets.
- Ideologies are “marketing” techniques.
- A Hobbesian view of competition for votes and power in a democracy.
- In a rent-seeking society, politicians sanction, then share, the “rents.”
- Budget maximization, plus rent seeking, leads to collusion and big government.

Thus, highly controversial assumptions are the basis upon which a remarkable edifice of small, impotent, and “de-skilled” governance has been “invented”. The “un-governability thesis” is an effective way of linking both an economistic and a libertarian wish to reduce the government’s role. “Rent-seeking” assertions under-pinning privatization and out-sourcing rationales continue to ignore the pressing questions about the structure of organization and the pathologies of managerial prerogatives (Johnston and Kouzmin, 1998). Finally, this ignorance severely distorts organizational, and inter-agent, partnership complexities confronting the requirements of “smart” regulatory and governance imperatives in globalizing and vulnerable economies (Kouzmin and Jarman, 2002).

If PCT is, in fact, the use of the methodology of economics to rationalize the failure of Economics in public policy goals, it is prudent to remember what Keynes, in *The General Theory* – wrote, ‘mad men in authority, who hear voices in the air, are distilling their frenzy from some academic scribblers of a few years back -- they are a slave to some defunct economist’ (Borins, 1988:16-17).

4. Vulnerability from “Downsizing”

In the manifold excesses of current Anglo-American managerial praxis, from short-term time horizons; grossly distorted expressions of managerial prerogatives and remuneration rationales; a calculated brutality far in excess of any “Human Relations” sensitivity; and the need to inflate shareholder perceptions of the “bottom line”, combined, these have led to a managerial “immorality” that staggers many ethical and stakeholders’ boundaries.

Post Enron, Tyco and other market-failure scandals, can much change? Are KM and senior management doomed to the moral/ethical vacuum of the “bottom line”? With remuneration packages deliberately focused around an economic-rationalist “brutality,” what KM and reflective space -- what discourse -- allows and enables moments of remorse, regret and KM transfer which implicitly accommodate the need for some personal accountability and some possible attempts at restitution?

Is it merely recourse to recalcitrant legal/governance codes that provides for accounting for managerial incompetence and ideologized “greed” or can KM help? Without some capacity for “Knowledge Preservation” – a record of the ontological/epistemological consequences of current praxis -- and KM, how will future management and governance discourse remember the current regressive nature of Managerialist/NPM behaviour? How will KM, in full flight with rhetoric about the importance of “tacit knowledge”, deal with such organizational hubris/incompetence?

Regarding “down-sizing/re-engineering”, as part of transferring that tacit knowledge, for example:

It is only by rumours and half-twisted truths that one finds out when a trusted fellow worker is gone...the deadly tentacles of downsizing mandates reach quietly out to remove one after another... This form of downsizing is like a hidden Gestapo, just waiting to strike. Only the privileged few know where and when this scourge will strike again and how long it will go on for (Ayling, 1997: 11).

In the future, ‘people training to be managers and leaders will examine the moral and economic bankruptcies caused by downsizing and marvel at the single-mindedness that led down to this erroneous path’ (Ayling, 1997: 104).

As corporations and public agencies begin to recognize and count the long-term damage inflicted by rampant Managerialism/NPM, the question to be raised for KM is: Has the cost/benefit analysis been carried far enough in an age when, arguably, managerial elites participating in the “slash and burn” or, more politely, “increasing share value”, regimes might be asked to justify their individual complicity in the economic and psychological destruction experienced by so many under Neo-Liberal, economic dogma (Kouzmin, Dixon and Korac- Kakabadse, 2001:1)?

A KM “audit” of “remorse” and “regret” under regimes of Economic Rationalism/New Public Management (Kouzman, Hase, Sankaran and Kakabadse, 2005) may help to precipitate and accelerate an appropriate reckoning of the socio-economic exclusion and the loss of trust. A search for managerial governance voices more prone to “reflexivity” (Sankaran and Kouzman, 2005), and regret, may also help in any exercise of KM of tacit knowledge to (re)build trust in government, let alone the corporate world.

However, as Vickers and Kouzman (2001: 96) point out:

Management, is seldom specifically researched as a factor contributing to occupational stress (Solondz, 1995: 218) and nowhere in the “seven deadly sins of process improvement” (Popoff and Brache, 1994: 23-26) are listed suggestions as to how one might go about sorting through the personal debris that necessarily accumulates from re-engineering the [agency]/organization.

The “troubled manager” is conspicuously absent in Managerialist/NPM discourse (Giacolone and Greenberg, 1997; Burke and Cooper, 2000). But what of emotionality, remorse and regret – key tacit knowledge issues at senior management level? Can management transcend “reaction formation” (Thompson, 1961), or career aspirations, in coming to terms with their own complicity in managerialist brutality?

Also, the topic of incompetence has been addressed in only a few contexts ‘...with professional incompetence -- the absence of ability, judgement or morals so total, incurable and potentially damaging that a professional’s right to practice can be terminated’ (Ott and Shafritz, 1994: 370) – is still not applicable to the practice of Managerialism/NPM, nor to the KM discourse.

Some advocate that managers need to “forget” what they know to enable them to learn new knowledge (McGill and Slocum, 1993) – to let go of the prevailing “realities” and learn a new praxis. Within a KM context, such “forgetting” would be a serious issue. But KM can help actors, with high levels of personal sense of culpability, to develop multiple frames of reference in managerial decision making. The litany of stupidity, failure, “group think”, incompetence, myopia and calculated rationalization in managerial behaviour is long overdue for some serious scrutiny and debate.

Remorse and restitution have been ignored phenomena in managerialist discourse for some time (Kouzman, Sankaran, Hase and Kakabadse, 2005). Whether virtues of “reflective emotionality” can be extended to wider employment situations, especially driven by so-called inevitable IT imperatives, is certainly problematic but requires KM investigation.

5. Auditing “Anorexic” Agencies

What economists, accountants and Managerialists/NPM do not understand are the behavioural realities underlying their “rationalities”. Depleting buffering capacity or “organizational slack” through “re-engineering”, “downsizing” or “de-layering” produces the “survivor’s syndrome” -- low morale, lack of trust and a decline in commitment to the agency/organization amongst “survivors” (Brockner et al, 1993; Cascio, 1993). As a result, the terms of the “psychological contract” in “lean” organizations are fundamentally altered (Cascio, 1993: 103; Kakabadse et al, 1999: 12).

Kakabadse et al (1999: 13) further outline some of the vulnerabilities that flow from downsizing/re-engineering. Worry-laden actors, with low self-esteem, direct their motivation to keeping their jobs, not to achieving interorganizational goals (Brockner et al, 1993; Hequet, 1995). Left unattended for a prolonged period of time, actors undergo a changed “world-view” (Erikson, 1994), often leading to a mistrust of organization and an institutional insensitivity to longer-term organizational requirements which, with time, can lead to “creeping crises” (Kouzman and Jarman, 1989; Jarman and Kouzman, 1990; 1993; 1994a; 1994b).

For example, the American Management Association's survey of downsizing in 1993 found that 80 per cent of surveyed organizations that had down-sized reported decreased employee morale; 13 per cent reported no change in employee morale; and 2 per cent reported increased morale (Fillipowski, 1993). Similarly, an Australian study found that 95 per cent of organizations that had undertaken structural changes through "re-engineering" had not achieved projected benefits (Saker, 1995).

The primary reason downsizing, eventually, fails is that the major, long-term effects are difficult to recover from. According to Ayling (1997: 160-164), downsizing:

- Creates a disjointed organization and creates inefficiencies.
- Retrenching good people hurts the organization beyond any short term gains.
- Creates a pool of highly-motivated ex-employees competitors or other agencies would be wise to employ.
- Reduces employee loyalty.
- Reduces customer/citizen satisfaction.
- Weakens the organization within.

Furthermore, accomplishing co-ordinated action in "lean" organizations means a more critical role for trust and personal engagement (Kiesler, Siegel and McGuire, 1984), all requiring quality dialogue and increased "face-to-face" interaction (Kakabadse, 1991). Because the extra resources and "slack" that normally insulate the firm or agency in periods of discontinuous transformation (Galbraith, 1973) are now non-existent, mechanisms and capacity for adaptation and change are not available to "lean" organizations. During change and turbulence (Kakabadse et al, 1999:13), 'lean organizations cannot utilize concurrence of design; where both old and new ways of doing things can co-exist, because such processes require additional resources in order to maintain performance, reliability or safety (La Porte, 1996; Perrow, 1994; Sagan, 1994)'.

"Lean" organizations, and those with the high employee turn-over, are often unable to maintain established relationships or nurture new relationships with trading partners and customers. Lean and flatter organizations are less able to buffer the core production processes from the uncertainty and variability of the external environment because the middle-level ranks that performed this function have been eliminated which, in turn, damages business or agency capacity. Thus, one of the central roles of networks of social relationships in organizations lies in predicting trust in economic life (Granovetter, 1985). Nurturing these relationships is necessary for organizational growth.

6. Vulnerability from "Out-sourcing"

The second source of strategic risk and vulnerability arising from de-regulated markets and, thus, requiring regulative consideration, is "outsourcing" and the emergence of Public/Private Partnerships (PPPs). 'Long gone has been the idea that governments, "lean" or otherwise, should lead and should challenge vested interests...[rather] a government should act more as a "conciierge", offering modest assistance ...but not intervening. The PPP is perfect for a government committed to non intervention' (Farrelly, 2005: 27) – refusing to regulate or being in a state of "capture" and being unable to regulate effectively.

Contrary to political and economic rhetoric about the role of public debt, PPPs constitute a more strategic form and process of out-sourcing, demanding that wherever public funding flows, private "rent-seeking" opportunities "must" be created for the private sector. Out-sourcing and PPPs, need to be seen as further reducing public agency mandates. At worst, PPPs should be construed as forms of long-term "capture" of the public sector, both by corporate and by management-consultant interests alike (Johnston and Kouzmin, 1998).

"Conflict of interest" requirements on behalf of politicians and senior bureaucrats apart, partnerships might be construed as asset-stripping — a form of fiscal "corruption" in the hands of oligarchs within the private sector who remain prime beneficiaries of such arrangements and, more disconcertingly, by

public sector oligarchies now pressed into the legitimization services for such “corrupt” practices — all in the name of effecting putative efficiencies in globalized, public sectors. Privatization of infrastructure is the current vogue, especially in the former Eastern European economies. Seen in these terms, managerial elites, public and private, need to understand, and anticipate, conditions under which the state could seek to terminate lucrative, or failing, partnering arrangements in the public interest.

The one-time Australian, New South Wales state, and conservative, Premier (1988-1992), and, unusually, a MBA graduate, Nick Greiner (2006: 22-23), has been most revealing in a recent interview about governance capacities under conditions of privatization.

- [Australia’s] Macquarie Bank fees are too high and more regulation of PPPs is required.
- PPPs are a deliberate instrument of infrastructural projects in NSW/Australia.
- PPPs have recently, because of “failures” (Dixon, Dogan and Kouzmin, 2004), become a political “minefield”.
- Infra-structure tolls are set by government and based on payment of up-front fees by private partners.
- Up-front fees are government revenue generators (de facto taxes).
- The historical model for such fees is the King granting private operators tax-collection franchises.
- [Australia’s] Macquarie Bank is “millionaire factory,” dependant on PPP fees – de facto tax agents.
- Retiring politicians’ “corruption” -- ex state Premier, and other ministers, joining Macquarie Bank on a sinecure after retiring from politics.
- High fees, versus government risk undertaking, are key policy issues in the debate about the role of public debt.
- The admiration of the UK Prime Minister, Tony Blair, for establishing a context of the public sector having a myriad of different governance structures.
- The need for more and newer regulatory authorities (eg, US turnpike authorities).

Argy (2003:70), a respected Australian economist, if that is not a “double” oxymoron, has argued that not all blame for the exclusionary consequences of economics and Neo-liberal agendas are properly located. “Hard” Liberal reform is “value driven”, seeking to change policy goals – it is a political philosophy rather than economic doctrine. Hard Liberalism:

- Promotes individualism and self reliance.
- Propagates “small” government and “win/lose” strategies.
- Is committed to exclusionary, non-egalitarian, commitments.
- Endorses privatization and outsourcing decisions without appropriate cost/benefit analysis.
- Seeks to destroy trade unions.
- Represents an ideological retreat from arbitration and collective bargaining.
- Manifests an abhorrence of debt. All state labor governments, in Australia, for example, currently eschew debt for financing infrastructure, health, education or future growth.
- Minimizes government debt. In Australia, for example, public debt is down from 15%, in the 1970s, to fewer than 3.0% in 2006. The OECD average is 40%.
- Defers infrastructure investments, except for PPP arrangements.
- Incurs higher amounts of recurrent revenue on infrastructure maintenance.
- Over relies on the private sector, even though government can borrow more cheaply.
- Creates a “democratic deficits” – constraining the ability of governments to optimize the “public domain.”
- Privatizes the future via the theory of “Regulatory Takings” (Epstein, 1985) – the present compensation for loss of future profits and “opportunity costs.”
- Eschews the fact that well-informed, competitive markets can improve the aggregate well being.

- Ignores the fact that there is no “template” for the size or scope of government and governmental activities.
- Ignores the fact that government arbitrates in the distribution of “efficiency gains”.
- Ignores the fact that policy can create “win/win” strategies.
- Is blind to the fact that government can intensify competition in disfunctional private markets.

Kouzman and Dixon (2006: 700) argue that “over the last [35] years, business communities have happily accepted the wisdoms of the Neo-liberal, Managerialist, meta-myth surrounding public sector reform and its efficiency-oriented agenda of ‘privatization’, ‘de-regulation’, ‘out-sourcing’”. Businesses entered tender battles over profitable public services -- nationalized railways, public utilities and mandatory pension provision and health and education services (Dixon and Kouzman, 2001a; 2001b).

Quite predictably, many cases of privatization and/or partnerships have demonstrably under-performed and found that their only safety-net was under the control of politicians, in many cases under increasing public pressure to deregulate the expanded private sector.

The dilemma that has now emerged both for business, and for government, is that there is a “gap between the Managerialist-inspired aspiration for the profitable privatization of public services and the financial and political realities... This ‘implementation gap’ is a source of frustration to those who see the profit-driven private sector as enhancing the performance of public services” (Kouzman and Dixon, 2006: 700).

To Managerialists/NPM, it is axiomatic that the frontiers of the state should be rolled back, so that self-determining individuals have more freedom of choice and more freedom to enter into their preferred contractual relationships; and that social action should be judged by the material value of its consequences. The consequence is the co-optation of the “normative structure” of public administration by Managerialists/NPM. The retirement, or avoidance, of public debt imperative, traditionally cited by governments for privatization and/or partnerships, obfuscates the fact that for more than 150 years, the “Northern Gradient” developmental experience relied heavily on the strategic use of public debt.

Once a threat to hegemony over the privatized public services becomes evident, “business would be particularly disdainful of any argument for the imposition of ‘community service obligations’ ... They would, in essence, deny any causal link between market practices and inadequacy in privatized public services” (Kouzman and Dixon, 2006: 704). Further,

The coercive power of the state is, indeed, a double-edged sword; it can ensure both the profitable implementation and the unprofitable termination of any privatization initiative. This power gives rise to an enormous challenge: how to extend the appeal of privatized public services by re-focussing attention on how to achieve a “better” performance, as perceived by shareholders, strategic stakeholders and those with power and influence in the politico-administrative system (Kouzman and Dixon, 2006: 705).

This has profound implications for corporate governance (Cutting and Kouzman, 1999; 2000; 2001; 2002) and the issue of the political will to regulate in the privatized state.

7. Regulatory Issues in PPP Failures and/or Terminations

Public services appropriation by the market-place makes imperative the design of socio-political governance mechanisms that require and support the building of corporate structures and capacities (Kouzman and Dixon, 2006:706-708).

- Market providers must be capable of “high-reliability” (La Porte, 1996) performance and, thus, capable of surviving through “inter-generational infinity”.

- Public regulators are obliged to have long-term horizons (Goodman, 1973) [thirty years, or more, for current PPP franchise agreements].
- Providers and regulators must gain learning capacities which enable them to provide corporate sanction and steering that go well beyond the putative market discipline of organizational termination which, effectively, permits the abdication of contractual responsibilities.
- Governments must avoid credit-rating “threats”.
- Regulators need constantly to have a view on who is “Principal” and who is “Agent” in a global economy?
- Rendering government activity “invisible” through the outsourced/off-shored/privatized “commercial-in-confidence” imperatives needs mitigating.

Thus, the key governance and regulatory questions (Kouzmin and Dixon, 2006:706) are:

- What is the best way of creating an enabling market environment which will foster adequately profitable, but socially and politically acceptable, market provision of public services, both in the distant and the near future?
- What multi-level political, administrative, and regulatory structures, culture, and processes are needed to protect the “public interest” in a privatized, public services environment?
- How should sub-optimal provision by market providers be dealt with in a market environment?

Whether “public interest” becomes subservient to “private interests” depends crucially on whether the state is willing and able to design, implement, and administer a set of regulatory arrangements that require market providers to deliver their promised public services outputs when contracted to do so (Kouzmin and Dixon, 2006: 706-707).

What administrative and financial constraints should be placed on market providers to permit the effective socio-political governance of (Kouzmin and Dixon, 2006:707):

- Investment risks — which relate to contracted market providers’ inability to provide promised benefits because of the achievement of lower rates of return due to downturns in the capital market, management inefficiency, and corporate or management malfeasance.
- Corporate risks -- which relate to contracted market providers’ inability to provide their promised benefits because of organizational termination resulting from corporate bankruptcy; deliberate boardroom business strategy decisions, such as undertaking a business rationalization because of the emergence of new, more profitable, business opportunities; a hostile corporate take-over or market providers legally abdicating their full contractual obligations because of organizational termination.

Whether “private interests” can subvert the “public interest” depends on the design features of the regulatory regime in situ (its structures, culture, requirements, and processes) which determine the degree of risk of governance failure due to (Kouzmin and Dixon, 2006: 707):

- Asymmetrical information flows — when the regulated market providers distort or withhold from regulators the information they need to regulate effectively.
- Agency capture — when the regulated market providers manipulate the regulators to achieve their “private interest” ends.
- Invisibility/Commercial-in-Confidence -- “Principal/Agent” fictions legitimize a massive scale of out-sourcing, off-shoring, partnering and privatization of hitherto public programs and service delivery to private, mostly unaccountable, contractors and other “invisible” parties operating under “commercial-inconfidence” within the privatized state (Shane and Nixon, 2007). The transparency issues of accountability are remarkably undiscussed.

These socio-political governance and regulatory imperatives are central to the building and maintaining of public trust and confidence in mandated market provision of public services. There is, however, little reason to be confident that the state can resist the appropriation of the public interest by the marketplace, for any socio-political governance failure may well encourage the spectre of government subsidization (Johnston and Kouzmin, 1998).

8. Vulnerabilities in the Digital Divide

It is clear that new vulnerabilities and regulatory questions arise from the tracking developments in the Information & Communication Technologies (ICT)/Digital Divide (DD), especially in a KM context (Korac-Kakabadse et al, 2000). Benchmarking E-government is one measure of the DD, but the exclusionary impact of ICT/DD lies in emerging E-society developments within a Neo-liberal agenda of market fundamentalism and ICT/DD strategic competitiveness. The UN is probably one of the very few institutions, rightly, presenting a socially-inclusive governance framework for the ICT/DD.

The “war on terror” will compound the current dilemmas of the ICT/DD and its exclusionary impacts. Government agencies have shut down web-site after web site; have re-classified documents previously de-classified; and have now rendered “information” as dangerous within this newer, security/political context. The “securitization” of E-government and KM is not, it seems, adequately addressed. The loss of KM capacities under commercial-inconfidence requirements of privatization/outsourcing does not help either.

The ICT/DD has become a platform of strategic competitiveness. ICT Research and Development has become economic and geo-political warfare – so much so that governments, for example, refuse to accept long-term, Microsoft hegemony. Again, the issue is how to confront the deliberate, exclusionary intent of the ICT/DD with inclusionary policies?

The privatization of the Internet is of major concern. The origins, and the first years of protocols, of the Internet were in the “public domain”. The privatization/proprietary issue is under-discussed as are issues of open-source software and the abuses of the Internet in proprietary contexts – identity theft; pornography; paedophilia; violence – in other words, a cost/benefit of the “dark-side” of ICT is called for, especially in the vulnerability context of the “North/South Gradient”. The “public domain” context of the ICT/DD seems missing in strategic/policy discussions.

There is the need to dis-aggregate the private sector in the question of technology transfer. The role of consultants is a real issue in contrast to those parties interested in effective technological transfer. Can developing societies “leap frog”/“technologically-migrate upstream” in the political economy of the ICT/DD? Can there be any “level-playing fields” within the ICT/DD?

There is a convergence assumption about ICT/DD that is not warranted and “Formative Contexts” (Unger, 1987) of nations are devalued. Can convergence be achieved through ICT? Should it? The ICT/DD is a most divisive policy agenda – it subsumes “culture wars” and many other polarities – the role the English language; gender in ICT use; consumer versus citizen conceptions of participation; “information clubs” etc. Tracking the ICT/DD set of contradictions over the next 20 years will be an important task. The “North/South Gradient” persists, perhaps, even more so through the ICT/DD.

The emergence of new property rights to be enforced in a globalized regime will not help and the “expropriation” of knowledge will become increasingly contentious, especially in an emerging “Knowledge Society” context. The political economy of this “Knowledge Society” is about the emergence of new property rights and their global enforcement. Knowledge is the new “commodity” to be captured and exploited.

9. The Need for a “Smart/Re-regulating State

If, as one primary example of rent-seeking, ‘privatization robs the state of the chance to be a model employer and increases the power of private capital vis-à-vis the state’ (Kingdom, 1991:469), then the future for a smaller but “smarter” state (Kouzmin and Jarman, 2002), indeed looks grim. However, what ingredients might constitute a “smart state” set of capacities?

- A recognition of the inter-dependency between Politics and Economics (Hirschman, 1970).
- Regarding the role of the state, reading less of Adam Smith and more of Karl Marx or, more importantly, Max Weber.
- A recognition that at least 4 models of markets exist – Libertarian; Social Democratic; “Junta”; and “Tiger” economies.
- An experience of paradigm tensions – uncoupling public policy from simplistic economic notions of equilibrium and recognizing the realities of complexity, chaos and uncertainty.
- Deconstructing “Principal”/“Agent” ambiguities under globalization – what are the roles of “markets” and “contracts” in New Public Management (NPM), domestically and under globalization?
- Remembering the reasons for market failures and the need for historical nationalization initiatives.
- Recognizing that reform and change in public sectors are strategic sources of “rents” for consultants – Micklethwait and Woolridge (1997).
- Understanding that the cult of efficiency is “dangerous” in a “Risk Society” (Beck, 1992) – “running on empty” and intolerance of slack/vulnerability/change imperatives.
- Recognizing that the “Washington Consensus” is, in fact, market fundamentalism.
- Reconciling the libertarian and collectivist imperatives in a global context.
- Reversing the “regressiveness” of management about psychological contracts in the face of the onslaught of contracts and market mechanisms.
- Avoiding 30-80-year project contractual, time horizons and recognizing the conflict between “inter-generational utilities” and “Regulatory Takings.” Avoiding privatizing “futures.”
- Disassociating public expenditure as being an entitlement to private rents.
- Understanding market and PPP Failures.
- Asking the question -- does transfer of risk actually occur in situations of public bailouts? Linking electoral/business cycles to 30-80-year project contracts.
- Reversing “corporate welfare” flows and demands for regulatory relief.
- Enhancing the ability to regulate and raise taxes as demand for public goods grows.
- Understanding the requirement for a global “New Deal” (Faux, 2001: 16) – a global “North” must protect its social standards and a global “South” must have capital investment for development.
- Understanding the contours of such a “New Deal” (Faux, 2001: 16): social protection; flexible development; social compensation; regulated finance; co-ordinated economic policy and democratic regionalism.
- Understanding the need to manage four “divides” – Capital/Labour (the class question); Economic Nationalism/Internationalism (the nation/state question); Digital Divide (the cognitive skills question); and Individuals/Community (the social/identity question) (Latham, 1998: xxiv).

10. Conclusion

In the struggle between states and markets, it is not, yet, a foregone conclusion that markets have gained the upper hand. Indeed, if Saul (2005) is correct, it appears that the public domain -- the non-tradeable social-goods sector that exists in every society -- is making a “come-back”. However, further questions arise and need addressing before judgement on this putative resurgence of the public domain, and some degree of trust in government, can be made:

- How are states to confront a range of intractable issues flowing from the social/economic exclusionary consequences of globalization (Farazmand, 2002)?
- Is public authority exercising any supervisory role where there is no strong social or political values to combat those of profit and growth, now even more considerably enhanced through the theory of “Regulatory Takings” (Epstein,1985), whereby transnational corporations sue the taxpayer, under NAFTA, if they believe public regulation has damaged corporate “future” profits? Citizens might wish to debate whether government, acting to protect public interest, should be compelled to pay transnationals for limiting or “taking” future profits.

The market place is currently privatizing “futures” through 30-80 year partnership and franchise agreements, whilst “Informatic Liberalism” (Howe, 2002) involves the rolling back many government-administered policies of regulation to accommodate, and entrench, economic models of action and stressing policy action ideologically independent of governance and/or re-regulation.

The understood dimensions and regulatory imperatives of the “Risk Society” (Beck, 1992) need further scrutiny in light of complexity and contingency introduced by globalization (MacDonald, 2002).

- How will the devolution of decision making flow from the local significance of globalization? How will governments respond to the “double” regimes of global and domestic regulatory pressures?
- How will governments manage the magnitude of job creation and growing income disparities evident with globalization?
- How will the political issue of maintaining sovereignty in a globalized world be affected?
- What is the optimal size, and architecture, of the state for governance assuming divergent, rather than convergent, development paths?

These are difficult questions – but, then, these are difficult times!

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ii. IT Infrastructure and Interoperability Issues

THE GAP PRINCIPLES: SUPPORTING IT PROJECTS AND E-GOVERNMENT THROUGH IMPROVED GOVERNANCE, ARCHITECTURE AND PROCUREMENT

Mr. Randy Ramusack

This paper identifies a set of principles covering IT Governance, Architecture, and Procurement (GAP) — driven by strong economic imperatives and advances in technology — that have been developed by leading private-sector organizations in recent years. The paper argues that GAP Principles can and should be adopted by the governments of developing countries. By doing so, these governments would increase the success of e-government projects and deliver significant efficiency and economic gains for local IT firms.

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1. Executive Summary

Microsoft commissioned a study in 1997 by McKinsey and Company to investigate how leading private-sector companies derive value from their IT investments. The results of the study were published in the McKinsey Quarterly Journal.

It is doubtful whether the business base for such a protracted and expensive (U.S. \$500 million) IT transformation project could be made to an executive board today.

McKinsey Quarterly Journal

In the 1997 McKinsey research on IT management best practices, a Chief Information Officer (CIO) at a large financial services company indicated that the most important IT project the company was undertaking was the five-year rollout of a new branch automation system. It is doubtful whether the business base for such a protracted and expensive (U.S.\$500 million) IT transformation project could be made to an executive board today.

The most significant insight of the 1997 research was the identification of a crisis. Far from deriving value from investments in IT, many of the companies were becoming overwhelmed by the complexity of their technology environments. The companies had fallen into what came to be known as the “IT Abyss.” The crisis at many of these companies became a lot worse before they finally started to regain control in the early 2000s. In the process, these organizations did finally converge on a set of best practices now widely in use.

These best practices fall into three broad strategic areas — governance, architecture, and procurement — which are the GAP Principles.

Governance covers the internal management structures and processes to make both long-term and day-to-day IT management decisions. The goal of good governance is to make best use of a set of limited resources (money and skilled labor) to deliver maximum benefit to the business as its needs evolve over time.

Architecture is the set of standards and technologies that provide the foundation for the delivery of IT-based solutions for the business. Good architecture ensures cost-effective, reliable, and secure delivery of IT-based business solutions. Good architecture also maximizes flexibility by ensuring that, as the needs of the business change over time, these can be serviced as quickly and effectively as possible.

Procurement is the set of processes by which the resources required to meet the organization's IT needs are acquired. Good procurement practices are designed to maximize cost effectiveness and flexibility for the organization.

Leading companies recognize that core business strategy and execution must lead and that IT plays only a supporting role. This was clearly shown by the 20 organizations interviewed for this report in 2006 by Charles Chang at Oaksmill Limited (see Figure 1 on page 10). They also recognize the strong interrelationship between each of the principles. The approach taken by these leading companies can be summarized as a set of "GAP Principles." A coordinated approach to these GAP Principles facilitates obtaining business objectives through IT and is central to the effective management of IT investments.

2. IT Challenges Facing Governments

The economic pressures that shaped the development of the GAP Principles in leading private-sector organizations were not generally felt in government. These best practices have not typically been adopted in the public sector, nor has the deep causal linkage between governance, architecture, and procurement been recognized.

In 2004, the World Bank lent more than U.S. \$1 billion to fund IT projects in support of government transformation initiatives in developing countries. By the bank's own estimates, more than 80 percent of all their funded projects include some form of IT component. Over half of these projects suffer some form of failure, ranging from late and over-budget delivery of planned systems to outright cancellation of projects.

Even in developed economies, the success rate of government IT projects is depressingly low. The United Kingdom (U.K.) National Audit Office highlighted the issue in a recent review of U.K. government performance. It is therefore unsurprising that developing-country projects suffer from similar failures. There are major barriers to the adoption of the GAP Principles by governments. It is often the case that structural autonomy between organizations creates significant barriers to the creation of a single integrated governance model for IT strategy.

Technology typically follows the structural rigidity of the organizations deploying it, resulting in stovepipe project implementations isolated from any overall integration or government-wide architecture strategy. Government CIOs, if they exist, often lack real authority across departmental and ministerial boundaries. Politicians sometimes see technology projects as trophies and electoral tools rather than true instruments of change.

Government procurement practices often lack the flexibility to acquire technology in a way that benefits both smaller local suppliers and the government itself. It is here that the GAP Principles possibly have the opportunity to contribute most. Implementation of the GAP Principles would dramatically improve the chance of building a sustainable ecosystem of local software and IT service providers.

3. Why IT Matters to Governments

The approach to architecture outlined here would ensure that large scale projects are split into smaller, more digestible application or service components. This would help smaller, local software entrepreneurs who are reluctant to take on the risk associated with large, complex government projects.

The benefits to governments adopting the GAP Principles can be summarized as follows:

Benefits of GAP Principles to Governments:

- They support the transformation agenda underlying e-government projects more effectively.
- They enhance the speed and efficiency of government service delivery supported by IT.
- They act as a key stimulant to economic growth by ensuring efficient transfer of funding to local software companies and IT services providers.

Failure to apply the GAP Principles will likely ensure the continued poor performance witnessed in many e-government projects today and a continued lack of opportunity for local technology suppliers in these developing economies.

International financial institutions (IFIs), such as the World Bank, have a pivotal role to play in driving the adoption of these “GAP Principles” to improve the use and effectiveness of IT in support of countries’ development objectives.

Benefits to IFIs:

- They help governments achieve their development objectives, including the benefits highlighted above.
- They ensure the most effective use of loans and grants for e-government initiatives and thereby improve the return on the investment and development impact of IFI funding.

The “GAP Principles” can and should be applied by the governments of developing countries. Adoption of these principles would help governments to harness IT more effectively in support of development objectives.

4. Private-Sector GAP Evolution

It is useful to review the history of Governance, Architecture, and Procurement (GAP) in the private sector. At any time, there is obviously a broad spectrum of approaches to GAP in the private sector. By necessity, this review identifies only the “macro” concepts.

Prior to the mid 1970s, organizational IT was largely dominated by centralized mainframe computers with little or no distributed computing resource. The status of the GAP Principles can be summarized as:

- Governance: Centralized IT department control
- Architecture: Centralized mainframe computing
- Procurement: Sole source

Emergence of Departmental Autonomy

The availability of smaller, cheaper mini computers by the mid 1970s to mid 1980s led to increased departmental distribution of information-systems resources across the organization. The GAP Principles evolved into:

- Governance: Centralized control with increasing departmental autonomy
- Architecture: Centralized mainframe with departmental computing
- Procurement: Multi-source

The Power of the End User

In 1981, the original IBM Personal Computer was launched. While PCs had been available for some time, it was IBM’s backing for the format that convinced companies that this could be treated as a serious business computing device. The availability of low-cost desktop computing devices led to complete departmental IT purchasing autonomy in many organizations. The GAP Principles morphed into:

- Governance: Federated tending toward Anarchic (No central control)
- Architecture: Client/Server (PC Client <-> PC Servers <-> Mini-Computer <-> Mainframe)
- Procurement: Best-of-breed (Hardware and software)

This “Anarchic” governance model created a situation in many companies that led McKinsey & Company to coin the expression “IT Abyss” to describe the situation into which many companies seem to have fallen. The “IT Abyss” was identified by four key characteristics:

1. IT spending grows rapidly, becoming an increasingly visible component of a company’s overall budgets.
2. An increasing share of IT budget is spent on maintenance and systems integration, rather than on delivery of new capability.
3. Complexity of distributed computing environment explodes, driven by rapid expansion in a number of computing devices, and a lack of defined interoperability standards.
4. Ineffective new development.

For many large, private-sector organizations, IT complexity was proving to be financially and operationally untenable.

Emergence of the Internet

Just as companies began to realize that they were overwhelmed by the complexity of their IT environments, the worldwide network erupted in the shape of the Internet. Many companies that had started to climb out of the abyss rapidly fell back into it. Sadly, the GAP Principles—in terms of governance and procurement—deteriorated into:

- Governance: Completely Anarchic (Complete devolution of IT purchasing authority to divisions and departments)
- Architecture: Web/Internet distributed computing (Implementation of “Boutique” and often unproven Web technologies)
- Procurement: One of everything

2001: The Crash

Three events eventually focused the attention of companies to the point where radical overhauls of their IT infrastructures became necessary.

- Year 2000 bug (Y2K)
- The stock market crash
- The 9/11 attacks

The individual impact of each of these events was quite different. The Y2K bug required all businesses to inventory their IT systems. The obvious risks associated with such a largely unmanaged IT environment resulted in a serious reappraisal of IT governance. The stock market “crash” and subsequent economic downturn led to a significant reduction in capital available for IT “investments.” And the terrorist attacks on the 9/11 World Trade Centre reminded all senior executives of the importance of business continuity. The combinatorial effect of these three events was pivotal in establishing the importance of the GAP Principles for today’s leading companies.

Moving Toward Recovery

The period since the events of the early 2000s has found companies dealing with an extremely difficult global economic climate. This has led to a much clearer focus on core businesses, the implementation of effective strategies for those businesses, and operational excellence in all aspects of the business, including IT.

Recent Gartner research indicates that the expected period for a positive return on investment for IT projects in large organizations is now less than 18 months. In many cases, it is less than 12 months. This focus on efficacy comes at a time when companies are realizing that well-managed IT can be a highly effective driver of the business.

Fundamental to all leading companies today is an understanding that an effective IT strategy requires an integrated approach to governance, architecture, and procurement—causing companies to implement the GAP Principles.

GAP Principles Explained

Why have organizations adopted the GAP Principles? Figure 1 shows the 20 organizations that Charles Chang at Oaksmill Limited interviewed in the first half of 2006 and their adoption of the GAP Principles. The extracts cited in the rest of the report are drawn from the detailed interviews. Please note that the views expressed from the respondents to this survey and quoted in this paper are not necessarily representative of those of their employers.

The reasons these organizations adopted the GAP Principles were:

- To align IT investment with business strategy and objectives.
- To improve the value of IT by prioritizing against business objectives.
- To reduce costs and optimize investment by reducing duplication and exploiting local solutions and expertise.
- To foster collaboration and improve relationships between different business units and between business units and the IT organization.

Figure 1: Adoption of the GAP Principles by the case organizations

Main Gap Principles

Additional or Subsidiary Principles

CASE	GOVERNANCE	ARCHITECTURE	PROCUREMENT	PROJECT MANAGEMENT	PORTFOLIO MANAGEMENT	RELATIONSHIP MANAGEMENT	BENEFITS MANAGEMENT	OTHER FACTORS
ABB	Practising	Practising	Practising	Practising locally	Planning to practice	Practising locally	Practising within project management	Vendor management
BBC	Practising	Practising	Practising	Practising	Practising	Practising (customers and vendors)	Planning to practice	
BCAA and TA	Practising	Practising EA	Practising	Practising	Practising within governance	Practising (customers and vendors)	Practising within project management	Business engagement and collaboration
Belgian SmalS-MvM	Practising (incl. external stakeholders & clients)	Practising TA	Practising, follows EU rules	Practising	Not practising (too many stakeholders)	Practising (pseudo commercial organization)	Practiced by individual stakeholders & clients	Quality and cost control
BP	Practising	Practising	Practising	Practising	Practising	Practising	Practising within project management	
BT Auto-ID Services	Practising	Practising TA	Practising	Practising		Practising (commercial organization)		
Codelco	Practising	Practising	Practising	Practising			Practising	Value engineering
Electrabel	Practising	Practising EA and TA	Practising	Practising	Practising within governance	Practising	Starting to practice	
Exel Logistics (Now DHL)	Practising	Practising EA and TA	Practising	Practising locally	Not practising (too many different customers)	Practising		Behaving commercially, innovation
Fairfax County, VA	Practising	Practising	Practising	Practising	Practising within governance	Practising locally	Practising within governance	Business collaboration, risk management
ICE, Costa Rica	Practising	Practising	Practising	Practising		Practising		
Marsh Europe	Practising	Practising	Practising	Practising	Practising within governance	Practising within governance	Practising within governance	Business ownership
Powercor (hybrid)	Practising	Practising	Practising	Practising		Practising (customers and vendors)	Starting to practice	Innovation
PwC Eurofirm	Practising	Practising locally	Practising	Practising locally	Practising locally	Practising locally	Practising within project management	Change management
PwC UK detailed TA	Informal	Outline EA,	Practising	Practising (new PMO)		Practising (customers and vendors)	Practising (customers and vendors)	Change management
Reebok	Practising	Practising EA and TA	Practising	Practising				Business knowledge, business analysis, risk management
SKF practice	Starting to	Practising EA and TA	Practising	Practising	Practising within governance	Practising	Practising within project management	Compliance (Sarbanes-Oxley), Security
State of Victoria, Australia	Practising	Practising, part-way between EA and TA	Practising	Practising	Practising	Practising (also vendor relationship)	Practising within project management	
UK Department for Work & Pensions	Practising	Practising locally	Practising	Practising locally	Practising within governance	Practising locally	Practising within project management	CMMI, Innovation
UK Office for National Statistics	Practising	Practising (mainly TA)	Practising	Practising				Business analysis and planning

Governance

IT governance must not be:

- *Bureaucratic—minimize reports and focus on decisions.*
- *Manipulative—avoid 'back-room' decisions.*
- *Obstructive—be clear about why something has been rejected.*
- *Inconsistent—do not play favorites.*
- *By-passed—have a procedure to stop unauthorized or architecturally non-conformant projects.*

Roger Flory
Managing Director of Business
Technology, Marsh Europe

Description

Governance covers the internal management structures and processes put in place to make both long-term and day-to-day IT management decisions.

The implications for governance start by defining architecture and its associated standards. These minimum standards must be defined and adopted across the establishment. The CIO and IT organization have the responsibility for defining the core architecture and ensuring it evolves to meet the changing needs of the business. This is where the first two GAP Principles come into play.

The IT organization and business units must agree upon and implement a structured set of engagement processes that ensure IT is aware of the future needs of the business. “Best of Class” IT organizations implement an Engagement Manager or Account Manager role responsible for engaging with a specific business unit, understanding their needs, and feeding this back into the IT planning processes. The person in this role typically understands both the needs of IT and the business with which he or she is engaging.

There is always a tension in large organizations between the power of the businesses and their desire for flexibility and the power of the IT organization and its desire to control complexity. This power has swung dramatically over the history of organizational computing. One extreme, with power in the hands of end users and departments, was reached in the late 1990s, followed swiftly by a recentralization of power into the hands of IT in the early 2000s.

The move to service oriented architecture (SOA), with its standards-based interfaces, will increasingly open up opportunities to ensure more flexible outsourcing or off-shoring. Open-standards-based architecture such as SOA facilitates integration of the outsource partners' systems. If the partner also adopts an SOA approach, then they need not replicate the infrastructure of each of their individual clients. They only need to integrate their own systems through the well-defined SOA interfaces. Several leading organizations are already using these approaches to facilitate off-shored back-office processing and development work.

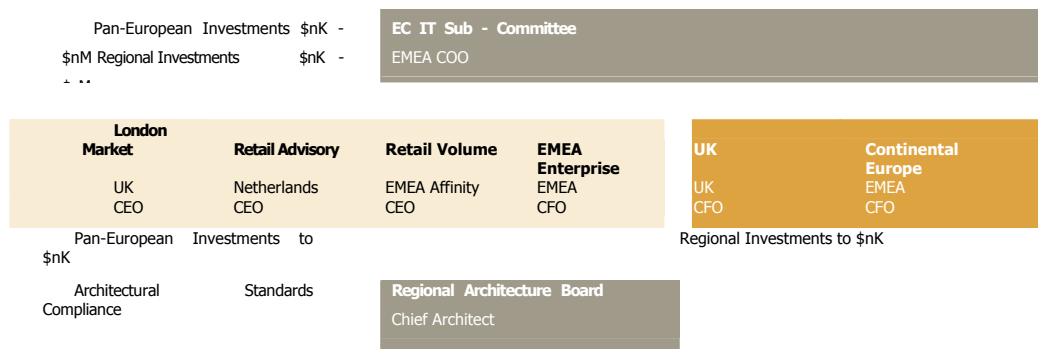
Accomplishing these goals does require adoption and adherence to the defined SOA and infrastructure standards for the organization. In “Best of Class” organizations, this requires a CIO with effective authority over this architecture and its associated standards. The CIO must set those standards in consultation with the business and then enforce adoption of those standards across organizational boundaries. By definition, this requires the CIO to report to someone who can make those cross-enterprise decisions in a company—the CEO, CFO, COO, or board and the Minister of IT, Communications, Finance or some other equivalent in government.

5. How Governance Works

Organizations used the following approaches when implementing IT governance, and many were successful by setting up a committee structure. The organizations interviewed had typically set up three levels of committee.

1. Top level: an investment committee, usually a subset of the executive committee.
2. Middle level: an applications committee or committees.
3. Bottom level: an architecture board, which underpins the higher-level committees.

Figure 2: Typical IT Governance Structure (Source: Marsh Europe)



- Senior business representation, 10-12 member Senior business representation, 10-12 members each – top committee is European Board level.
- Agree strategy and investment priorities supported by ETG technical and financial input.
- Aligned to business processing characteristics rather than the business matrix, to relate more directly to technology needs.
- Distinguishes pan-European and strategic initiatives from local technical needs.
- Meet quarterly with additional fast-track interim process.
- Chaired by business; ETG supplies data, facilitates and records.

Engaging business colleagues and IT leaders through “socializing” activities and in some cases bringing in consultants to start the process.

- The IT steering committee monitors the entire IT project portfolio to assess whether the investments are providing the expected benefits. This monitoring process provides a broad perspective for senior executives who independently and objectively evaluate and make decisions on the overall status, mission needs, and priorities for the organization.
- Multiple structures work well together, with each level taking decisions within its scope and making recommendations to the higher level as appropriate. The whole is underpinned by the architecture board, which gives advice and warns when projects are non-compliant.

Benefits...

The interviewees identified several benefits associated with adopting IT governance, mainly for the business, but also for the IT organization. Reported benefits included:

- A 30 percent saving on standard desktops and laptops that could not have been achieved without the IT governance mechanism.

- It is now easier to check whether a new initiative conforms to the architecture:
 - Reasons for approving and rejecting investment decisions are now transparent and objective.
 - Annual savings of £2 million (U.S. \$3.8 million) from cancelling projects that could not be justified, but would have been approved under the old mechanism.
 - The risk of failure has been reduced. Overspends and overruns have also been cut.

IT spend is now closer to business objectives and indirectly made savings of over 20 percent of IT budget.

Haider Rashid, Group CIO, ABB

Change of mindset was achieved mainly through continuous face-to-face communications.

Dayantha Joshua
CIO, UK Office for National Statistics

...Obstacles

Most of the concerns expressed by the sample concerned loss of power or increased bureaucracy. They were overcome through persistent “socializing.” The main obstacles to implementing a new or changed IT governance structure were:

- Perception of loss of power: This is real for those who exercise more power than their business unit warrants, but unfair to others.
- Resistance to change: Dismantling old mechanisms, however inadequate, inevitably raises objections.
- Aversion to formal governance: Initially, formal governance procedures were seen as an obstacle by many project managers and staff.

Communication is Paramount

The main IT governance lessons from the case histories are communicate, communicate, and communicate—both when setting up a new governance process and once it is working. People will need hands-on support to accept the new process.

Do

- “Sell” the value of IT governance to business management and IT workers, and getting senior business managers committed is critical. This also means taking the time to “socialize” the model adopted and then adapt it.
- Setting a realistic timescale is critical, as is using metrics to monitor and show how governance decisions are (or are not) being implemented.
- Organizations with a mix of large and small business units should select the governance committee carefully so smaller units do not feel that larger ones are dominating unfairly. The same applies to geographic representation, where smaller regions should not feel their needs are being ignored.

Don't

- Assume “one size fits all.” Start with a standard method, but tailor it to the firm’s specific circumstances. This also means not over-complicating IT governance. Stop when the governance process is sufficient.
- Formalize the process or communicate it until influential stakeholders have bought into and validated it.
- Assume the IT governance structure will not change once it has been set up; there will always be the need for change.

*Don't neglect political and cultural issues.
Do manage expectations.*

Marco A Orellana, Silva, CIO, Codelco

6. Model Architecture

Architecture is the set of standards and technologies that provide the foundation for the delivery of IT-based solutions for the business. Good architecture underpins cost-effective, reliable, and secure delivery of IT-based business solutions. Good architecture also maximizes flexibility by ensuring that, as the needs of the business change over time, they can be serviced as quickly and effectively as possible.

The core standards upon which the Internet and Web infrastructure is built not only add to the complexity problems faced by large organizations, but also become the seeds of a solution to the problem.

Service orientation is now recognized as an effective approach to addressing past concerns about architectural complexity and the need to provide flexible and responsive systems to support complex businesses. The benefits from implementing a Service Oriented Architecture (SOA) are seen as compelling. Most leading companies are already well advanced in their plans for implementing this approach.

Benefits of a Service Oriented Architecture

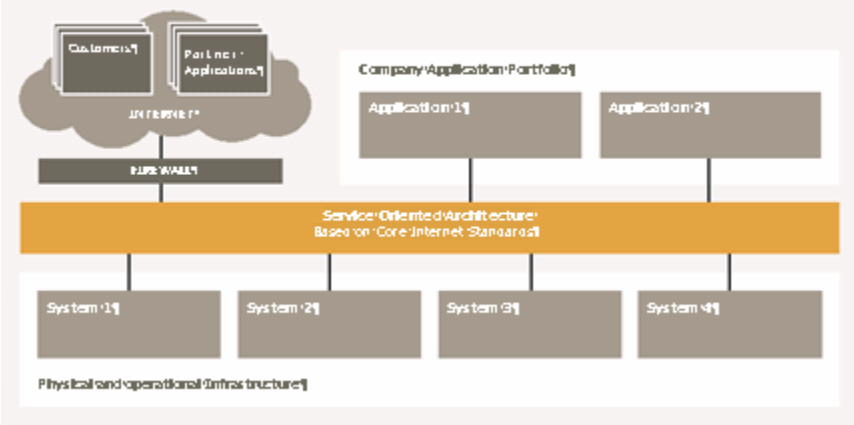
- *Vendor neutrality* – An SOA is based on a set of open standards that have been widely embraced by the vendor community. They facilitate interoperability between applications and systems.
- *Speed* – Applications built on SOA principles have well-defined and interoperable interfaces. Adding new functionality requires less system integration and can be delivered more quickly than with previous architectural approaches.
- *Cost* – The complexity of building distributed applications is reduced by using well-defined interfaces based on open standards. This improves developer productivity and reduces systems integration costs.
- *Flexibility* – An SOA hides or abstracts the underlying physical complexity of the IT infrastructure. Once an SOA has been implemented, IT organizations can add or remove capacity to meet changing demands without having to re-write the applications.
- *Extensibility* – An SOA is based on the same open standards used in the Internet. This makes it much easier to connect customers and partners to services running on the corporate infrastructure.

The implementation of an SOA approach has direct implications for IT governance and procurement.

A typical technology architecture framework can be simplified down to three layers that include an application layer, the integration layer (sometimes using SOA principles), and an infrastructure/platform layer (see Figure 3).

Real-world architectures are inevitably more complex, but this three-layer model will serve to illustrate the key connections between governance, architecture, and procurement.

Figure 3: Typical Technology Architecture Framework (Source: Microsoft)

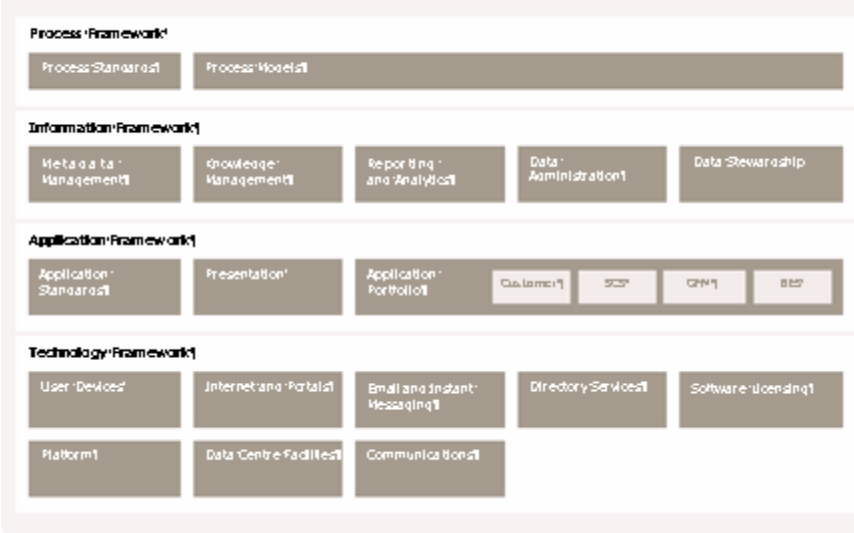


New Approaches Evolve

Several of the organizations used different approaches to developing their IT architecture, depending on their initial starting points:

- Those that have developed an enterprise architecture have typically done so at an outline level. A fully defined enterprise architecture requires business managers to model business processes and agree on a common information model. The cost would often be more than could be justified by the expected return.
- An enterprise architecture framework typically has four layers:
 1. Process layer
 2. Information layer
 3. Application layer
 4. Technology layer

Figure 4: Typical Enterprise Architecture Framework (Source: Exel Logistics (now DHL))



IT costs alone are 20 percent less expensive if a global architecture was followed, compared to each country going separately. The financial unit estimated that harmonized financial processes following the architecture will cost 6 to 7 percent less.

Ludo Van den Kerckhove, CIO, Electrabel

- Several organizations set up an architecture board to manage the process, often below the governance committee. Some also used consultants to educate their own people so they could become self-sufficient as quickly as possible.
 - In organizations with multiple business units, each significant unit has a representative on the architecture board to ensure the unit's views are taken into account and to foster ownership by the business unit.
 - Another large IT department formed a strategy and architecture team, which varied between 12 and 18 people, to prepare a "blueprint." Business colleagues were involved to ensure the blueprint was aligned with business objectives.
 - One organization followed three kinds of architectural principles:
- Mandatory: A project must comply with the standard unless it has prior, explicit approval from the architecture board.
- Consultative: A project can diverge from the standard, but only after consulting the architecture board.
- Advisory: A project can diverge from the standard without consulting the architecture board, but should inform it.

Measurable Benefits

The sample reported real and often measurable IT architecture benefits:

- The efficiency of application integration work improved by up to five times, notably when there was a need to integrate with the systems of a newly acquired customer.
 - The architecture helped the applications portfolio to be rationalized and reduced, with related cost savings.
 - Having an architecture increased the speed of decision making.
 - The benefits from re-use are beginning to be seen, especially on integration projects.
- The relationships with business colleagues have improved. They now collaborate with IT workers on defining business processes and understand why they should invest time and effort.
- For examples in the U.K.:
 - The technology architecture ensures queries about 2001 U.K. Census data (available online) are processed with little or no effort. The cost of processing these queries is much lower than for the 1991 Census, which is unavailable online.
 - The technology architecture has helped increase revenue from genealogical searches by eight times since 2003. Eighty percent of revenue from searches for birth, death, and marriage registrations is now generated online.

Challenges to Overcome

The biggest obstacle to defining an IT architecture and ensuring compliance with it is changing the mindset of employees. Another obstacle is the perception that a common architecture will lead to a loss of autonomy and power. The feedback regarding the obstacles to implementing IT architecture was:

- Developing an enterprise architecture meant engaging people across the enterprise. It was also necessary to "sell" the concept and explain how much had to be invested up front.
- Not having a "central" IT budget—only project-oriented and operations budgets—made justifying architecture expenditure more difficult.

Don't let IT people untrained in procurement engage with suppliers directly. Their technical bias makes them attracted to the features.

Dominique Moreau, CIO, PwC UK

Lessons Learned

The case histories show that, as with other IT work, delivering and demonstrating the value of IT architecture early is important to maintaining momentum. The specific lessons are:

Do

- Ensure the CEO is convinced that defining an IT architecture is a business-transformation activity rather than a cost-saving technology program.
- Start small with achievable architecture projects and let business people who will benefit promote those benefits to their peers.

Don't

- Use a common IT architecture as a tool for rationalizing the business structure or try and “sell” architecture on its theoretical merits. Business people like to see practical examples.
- Rely too much on external consultants. Use them to kick-start the process of defining the architecture and educate the firm’s people. “Own” the architecture.

Don't spend too long on the initial study; start showing results, ideally a few months from the start.

Andy Bryan, Head of Architecture, Exel Logistics (now DHL)

7. What is Procurement?

Procurement is the set of processes by which the resources required to meet the organization’s IT needs are acquired. Good procurement practices are designed to maximize cost effectiveness and flexibility for the organization.

The three-layer architecture in Figure 3 implies that procurement can be broken into three models: procurement for core architecture services, procurement for operational infrastructure services, and procurement for applications and application services. Each of these requires a different approach in terms of vendor selection, time horizons, and selection criteria.

Selection of vendors for core architecture services is typically based on several criteria. These include the vendor’s long-term viability and the ability of the vendor’s technologies to drive down costs, improve manageability, and increase flexibility for the organization. It is also quite common for large companies to undertake a road mapping exercise. Leading companies define a template architecture and road map to show how the architecture will need to evolve over time to meet the needs of the business. Vendors are then asked to overlay their product offerings on this roadmap so the customer can evaluate breadth, depth, and timing of capability delivery. This approach is used to narrow the vendor selection down to a few companies that have the broadest and deepest fit with the template architecture.

New Approaches to Procurement

The SOA approach perhaps opens up the most interesting opportunities for procurement of applications and applications services. Large-scale projects will still require deep project management, analysis, and system design skills to ensure the final systems are well characterized and meet performance and other service level commitments. These depth skills will often only be found in the larger system integrator companies and will need to be procured. However, the SOA approach abstracts the physical and operational infrastructure through a set of standard and well-defined interfaces. Large-scale applications can now be decomposed into smaller, less complex applications services. Development and integration of these services becomes much more straightforward because of the open standards and interfaces being used. These smaller application services can now be built and integrated by smaller, perhaps local vendors who will offer lower costs and improved flexibility and versatility.

The procurement model for applications and services therefore moves to a two-track approach: acquiring project management and design skills from the traditional systems integrator channel and sub-contracting applications service module development to smaller, more flexible, low-cost software development companies based locally. This last point serves as an additional incentive to stimulate growth of the local IT sector.

In the sample of companies interviewed, IT procurement was implemented in a fairly straightforward manner, often after consulting the corporate procurement function and usually involving business executives. The sample described the following approaches:

- In an organization where IT was wholly outsourced, a senior IT executive with prior experience of a successful vendor management role in that organization was appointed head of the vendor-management unit. His first action was to set up a professional procurement function and create guidelines and procedures (labeled the “call-off process”) for procuring IT within the organization’s outsourcing contract. He also provided guidelines for small IT procurements outside the contract.
- In one organization, the IT procurement process was developed jointly with the corporate procurement function.

The procurement process has yielded very tangible benefits, lowering costs by 20 percent in a historical comparison.

Ken Ontko, CIO, British Columbia Automobile Association

Reasons for the specific IT procurement practices are summarized below:

- Do you use a best-of-breed approach or prefer a single vendor and architecture? Most preferred the best-of-breed approach, with a separate choice made for each technology category defined by the technology architecture (servers, desktops, database, and so on).
- Do you have framework agreements in place? Most had such agreements in place, which means that, once a vendor has passed the selection criteria for a technology category, it does not need to tender again each time new equipment or a new service is required. However, the vendor has to demonstrate it is continuing to deliver value.
- Do you use a best-value or lowest-cost approach to IT procurement? Most preferred a least-cost approach, either because of public-sector procurement rules or because of corporate guidelines. Several firms, however, stressed that no major IT purchase was made solely on cost. Fitness for purpose was also an important criterion.
- IT procurement in the case study organizations proceeds well. Government and regulated industries need to comply with external rules and regulations for procurements above certain thresholds.

What Works Well

While some case studies could cite only soft benefits, others cited the following, fairly substantial hard benefits when adopting the IT procurement principle. They showed that formal processes improve the efficiency of IT procurement, reduce procurement costs, and sharpen the focus.

- The procurement process helps one organization to make IT choices on a “whole of business/enterprise” basis, rather than in a piecemeal way driven by individual requirements.
- Where a formal procurement process replaced an informal one, the formality often brings side benefits, such as a more considered definition of requirements.
- In deals that wholly or largely outsource an organization’s IT, there is sometimes an immediate pay-off. The vendor either takes on the capital cost of the assets or is contracted to pay the client up-front some or all of the projected savings for the first n-years of the contract—in effect, a guaranteed productivity improvement.

Challenges of Procurement

The sample identified some obstacles to implementing IT procurement, but these were less significant than the obstacles to implementing governance or architecture principles. Specific obstacles mentioned were:

- In organizations that already had informal procurement processes, the change to a formal process was seen as bureaucratic and the cause of a loss of power.
- Where there was already an informal process, it took time to educate and train procurement executives to write good requests for information (RFIs) and requests for proposals (RFPs).
- Several organizations faced internal cultural issues when they introduced formal IT procurement practices, particularly a perceived loss of power by divisions that used to do their own procurement.

Lessons Learned

The lessons learned in the case studies had more to do with vendor management than with IT procurement itself.

Do

- Standardize procedures for carrying out financial analyses and preparing proper business cases so the cost/benefit is clear and comparable between different proposals.
- Take time to measure the “before” key factors so the “after” performance can be measured correctly.

Don't

- Predict the market, test it.
- Sell yourself short—you can always say “no.”
- Take the risk alone; share it with the vendor.

The challenge is to build proper business cases. It is relatively easy to estimate the cost, but much harder to estimate the benefits of a project.

Glen McLean, CIO, Powercor

8. GAP Principles in Developing Countries

Most commentators would agree that IT can have marked benefits for developing nations when implemented appropriately. Effective IT systems can improve the transparency of government, helping to increase integrity. They can improve efficiency and help reduce red tape and bureaucracy, which has direct benefits in improved services for citizens and businesses. Government implementations of IT can also act as a catalyst for the development of local IT skills and local software and IT service providers.

- The adoption of the GAP Principles by developing-nation governments would deliver significant benefits. Most notably, implementation of the GAP Principles would increase the opportunity to build a sustainable ecosystem of local software and IT service provider companies, while building up one's own IT infrastructure and the requisite eGovernment Services.
- In most developing nations, the government is the single largest procurer of IT. Adoption of the GAP Principles could ensure more of that spending ends up in the hands of local software companies and IT services providers.
- By applying the GAP principles and improving access to government IT projects, a virtuous cycle of growth and development can happen within a country. The government's IT projects would more successfully and rapidly be completed, while fostering the growth and expansion of its local IT industry.

The IT initiatives to support government transformation projects in developing nations are often underwritten by IFIs, most notably the World Bank. The World Bank and other IFIs are not aid agencies. They provide funding with an expectation that the loans will be repaid. They therefore care about the efficiency with which funding is applied and the effectiveness of the projects that are funded.

The executive directors and boards of these IFIs should be concerned about the poor performance and high failure rate of many e-government projects. These projects are consuming valuable and limited funding resources and failing to provide the returns or improvements to government development objectives, transparency, efficiency, and improved services to citizens one might expect.

For these reasons, the World Bank and fellow IFIs should have a vested interest in ensuring recipient governments adopt best practices that improve utilization of funding.

One of the benefits many organizations are seeing from a standards-based approach to architecture is an ability to move to a shared-services or outsourced-service model for the operational infrastructure. Most leading organizations moved, sometimes dramatically, in this direction.

The abstraction afforded by a service-oriented and standards-based architecture ensures more effective partitioning of the operational infrastructure and more flexibility in geographic hosting of services. As an example, one global oil company has reduced its data centers over the last five years from 14 to just three. This consolidation of physical infrastructure has direct benefits in reduction of costs, as well as improvements in reliability and operational service levels.

Proposed IFI Action Plan

- Make implementation of the GAP Principles mandatory before funding IT projects.
- Make GAP planning and implementation a core part of Country Assistance Strategy development.
- Use existing knowledge-sharing processes to further illuminate and identify best practices in IT governance, architecture, and procurement.
- Adjust procurement practices to recognize the differences between procurement for architecture, applications, and operational infrastructure.
- Ensure funding flows through local software companies and IT services providers

9. Summing Up

IT is not a cure all for the development challenges of emerging-market economies. However, it can play a significant support role. Governments today are facing a set of global economic challenges that need solutions.

The GAP Principles are a distillation of best practices from leading private-sector organizations. Most, if not all, of these organizations have global operations, which benefit when governance is improved in developing nations. Each of these companies, therefore, has a vested interest in seeing the GAP Principles applied by governments around the world. IT leaders in these companies would often be willing to partner with government leaders to exchange ideas and best practices if an appropriate forum were created for such an exchange.

Developing-nation governments face many challenges, particularly in the provision of basic services such as clean water, food, healthcare, shelter, and economic opportunity for all citizens. IT is not the answer to these problems. However, effectively implemented IT, with good governance and architecture, can support and speed up the achievement of development objectives with the broadest benefits for society. Badly implemented and poorly governed IT will only waste valuable resources, benefiting no one.

Appendix

(i) IT Governance

Definitions of IT Governance:

- “IT governance is about assigning decision rights and creating an accountability framework that encourages desirable behavior in the use of IT.”
- “Effective IT Governance by Design” (January 2003), MIT Center for Information Systems Research (CISR), Sloan School of Management and Gartner’s Executive Programs (EXP). This report also identifies five domains of IT governance: “maxims” or policies, infrastructure strategy, architecture, business application needs, and investment and prioritization. <http://web.mit.edu/cisr/>
- “IT governance is an integral part of enterprise governance and consists of the leadership and organizational structures and processes that ensure the organization’s IT sustains and extends the organization’s strategies and objectives.”

The IT Governance Institute www.itgovernance.org

Further reading:

- Weill, P. and Woodham, R., Don’t Just Lead, Govern: Implementing Effective IT Governance, Working
- Paper 326, MIT Sloan CISR, April 2002

(ii) IT Architecture

Definitions of IT Architecture:

- “The fundamental organization of a system, embodied in its components, their relationships to each other and the environment, and the principles governing its design and evolution.”
- ANSI/IEEE Standard 1471-2000
- “Enterprise architecture (EA) is a conceptual tool that assists organizations with the understanding of their own structure and the way they work. It provides a map of the enterprise and is a route planner for business and technology change.”
- Michael Platt, Microsoft (published in an article on the IT Architect Institute’s Web site) <http://www.itarchitect.co.uk/articles/display.asp?id=33>
- Further reading and useful Web sites
- Ross, J.W., IT architecture and business strategy: rethinking the relationship, MIT Center for Information Systems Research, Sloan School of Management, November 2001
- IT Architecture Institute <http://www.itarchitect.co.uk/>
- Information Architecture Institute <http://iainstitute.org/>
- The Open Group Architecture Forum (TOGAF) <http://www.opengroup.org/architecture/togaf8-doc/arch/p1/togaf%20faq.htm>

(iii) IT Procurement

Definition of IT Procurement:

- “Purchasing (procurement) means a commitment to pay for products or services rendered. It includes activities variously described as acquisition, procurement, buying, sourcing, and supply management. It also includes the negotiation of framework contracts and outsourcing.”

IT Purchasing: Taking Control, Wentworth Research, September 1996

Further reading and useful web sites

- Improving IT procurement, U.K. Government National Audit Office
http://www.nao.org.uk/guidance/focus/0304877_pp10-11.pdf
- U.S. National Purchasing Institute
<http://www.nationalpurchasinginstitute.com/home/index.asp>
- U.S. Institute of Supply Management (former U.S. National Purchasing Association)
<http://www.ism.ws/AboutISM/index.cfm>
- U.K. Association of Purchasing and Supply <http://www.ukpurchasing.co.uk/>

(iv) IT Project Management

Definition of IT project management

“A project is a unique set of coordinated activities, with definite starting and finishing points, undertaken by an individual or team to meet specific objectives within defined time, cost, and performance parameters as specified in the business case. It should have the following characteristics: a finite and defined lifespan; a defined and measurable business product (deliverables and/or outcomes to meet specific business objectives); a corresponding set of activities to achieve the business products; a defined amount of resources; and an organization structure, with defined responsibilities, to manage the project.”

U.K. Office of Government Commerce (OGC)

Further reading and useful web sites:

- E-Government for Development Success and Failure Rates of E-Government in Developing/Transitional Countries: Overview Richard Heeks, IDPM, University of Manchester, U.K. 2003 <http://www.egov4dev.org/sfoverview.htm>
- Common causes of project failure, U.K. Office of Government Commerce (OGC), 2001 http://www.ogc.gov.uk/sdtoolkit/Reference/ogc_library/bestpracticebriefings/causesprojfailure.pdf
- OGC Gateway™ Reviews, U.K. Office of Government Commerce (OGC) <http://www.ogc.gov.uk/index.asp?id=377>
- Project Management Maturity Model: v5, U.K. Office of Government Commerce (OGC), October 2002
- http://www.ogc.gov.uk/sdtoolkit/reference/tools/PMMM_release_v5.pdf
- APM Group (APMG) <http://www.programmes.org/Web/Site/AboutUs/CompanyBackground.asp> was established in 1993 as the trading arm of the Association for Project Management and became independent in 2000. Since 1996, it has—on behalf of and in partnership with the OGC—developed and managed the accreditation of PRINCE2, Managing Successful Programmes (MSP), and the Management of Risk (MoR).
- International Project Management Association <http://www.ipma.ch/asp/>
- International Project Management Forum www.pmforum.org
- International Project Management Institute www.pmi.org
- The Standish Group (researchers into why projects fail) http://www.standishgroup.com/sample_research/PDFpages/q3-spotlight.pdf

THE CONNECTED REPUBLIC 2.0: NEW POSSIBILITIES & NEW VALUE FOR THE PUBLIC SECTOR

Mr. Martin Stewart-Weeks and Mr. Paul Johnston

A project is a unique set of coordinated activities, with definite starting and finishing points, undertaken by an individual or team to meet specific objectives within defined time, cost, and performance parameters as specified in the business case. It should have the following characteristics: a finite and defined lifespan; a defined and measurable business product (deliverables and/or outcomes to meet specific business objectives); a corresponding set of activities to achieve the business products; a defined amount of resources; and an organization structure, with defined responsibilities, to manage the project.

U.K. Office of Government Commerce (OGC)

The Web gets its value not from the smoothness of its overall operation but from its abundance of small nuggets that point to more small nuggets. And, most important, the Web is binding not just pages but us human beings in new ways. We are the true 'small pieces' of the Web, and we are loosely joining ourselves in ways that we're still inventing.

David Weinberger, *Small Pieces Loosely Joined: A Unified Theory of the Web* (2002)
www.smallpieces.com/content/preface.html

1. Introduction

In the United Kingdom, a new service is being trialed that allows people to report graffiti, broken streetlights, and other minor issues by going to a web site and putting a flag in a map of their local area with a description of the problem that needs to be fixed.¹ The Neighbourhood Fix-It service provides a shared public space where people can track how the problems are being resolved and join in discussions about how to prevent difficulties from occurring in the first place.

In the Philippines, the country's 16 million mobile phone users have become freelance environmental protection officers able to report smoke-belching public buses and other vehicles via text messages. They can also seek emergency assistance and report wrongdoing by police officers in the same way.

In the United States, a group of friends recently launched Change.org, a web site designed to link people who want to influence social change. The site enables activists to find like-minded people and share photos, videos, and information in support of particular causes. They can also highlight events or actions, raise money, or comment on nonprofit projects.

Think of these stories—and there are thousands more—as dispatches from the frontline in a revolution characterized by the simple but radical fact that we increasingly live in a world where everyone is connected to everyone else. It is a world where Skype built a phone system from the connected computers of millions of individuals around the world; where Wikipedia tapped the wisdom of crowds to produce the world's most comprehensive encyclopedia; and where Google Maps enable anyone to pull together data sets and literally put them on the map.

The guiding principle of this world is “small pieces, loosely joined.” Value comes from orchestrating the productive interaction of lots of different people animated by a common goal and enabled by shared processes. Clumsy hierarchy and monolithic institutions fracture into smaller pieces and looser, more open and democratic affiliations and practices. In this new, connected world, speed, agility, and responsiveness are the hallmarks of top performance. Results are delivered not through the deployment of tightly

¹ <http://www.neighbourhoodfixit.com/>

controlled, centralized plans and instructions, but through the empowerment of millions of end points linked in ever-changing combinations.

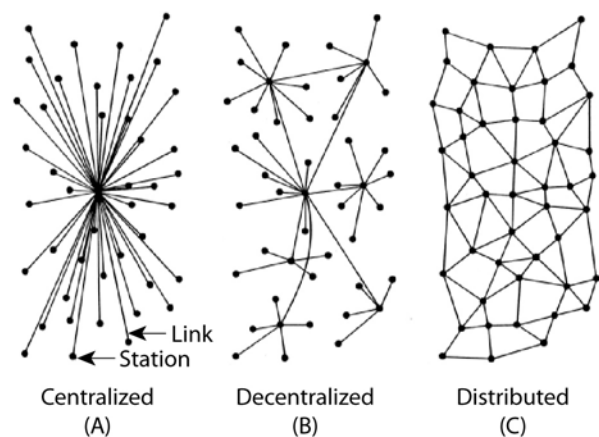
These trends are changing every aspect of the world in which we live, bringing challenges and opportunities for every kind of organization. On the one hand, people’s expectations are changing—they want faster, better service and expect to be engaged in new ways. On the other hand, operating models are emerging, animated by new methods of connection and collaboration. What is clear is that traditional processes, structures, and organizations are often no longer the best way to get things done. Confronting this issue is vital for any organization, but especially for those in the public sector, given the unforgiving scale and complexity of the challenges governments are trying to solve.

In this paper we explore the implications of a connected world for the public sector. Our intention is not to offer simplistic prescriptions, but to provoke new thinking about ways in which the emerging technologies of communication and collaboration can improve the basic operations of the public sector and fuel a deeper process of innovation and transformation.

2. A New Organizational Model

To understand this new world, it is worth going back to the origins of the Internet itself. Writing for the RAND Corporation in 1964,² Paul Baran explored the issue of creating a resilient communications network—one that could operate when many of its nodes (and the links between them) were no longer functioning. The context for his analysis was work for the U.S. Air Force in relation to a possible first strike by the USSR; as Baran himself pointed out, however, the implications went beyond the military. In fact, his idea of a distributed network provides a radical alternative to the traditional options of either a centralized or decentralized network. The power of this idea is that it offers a new model for how resources can be organized to achieve a particular goal.

Figure 1. Distributed Networks: A New Paradigm



Source: Paul Baran, RAND

² Memorandum RM 3420 PR; see: http://www.rand.org/pubs/research_memoranda/RM3420/

Over the last 20 years, we have seen the implications of this new model in a world where technology is making it easier to connect people, places, and things. Furthermore, the possibilities inherent in this new approach keep growing as the network becomes more intelligent. No longer is the network a dumb highway transporting data around an office or across the world; rather, it is a platform that can recognize the differing nature of the demands being placed on it and respond accordingly.³

3. Small Pieces, Loosely Connected

The best example of a distributed network is, of course, the Internet itself. In his book *Small Pieces, Loosely Joined*, David Weinberger set out his views on the defining characteristics of the new Internet world. What he describes is a world in which meaning and value increasingly derive from the ability to connect people, ideas, and organizations in new patterns of communication and collaboration. This implies a radical shift away from hierarchy and centralized control.

Weinberger illustrates his point by describing the Web's impact on publishing and writing. The old model, he suggests, is about control: a group or individual is responsible for a document's content and releases it to the public when they consider it completed. The point of the model is that once a document is published, no one can change it except the original publisher. The Web ditches that model and says instead, "You have something to say? Say it. You want to respond to something that's been said? Reply and link to it. You think something is interesting? Link to it from your home page. And you never have to ask anyone's permission." By removing the central control points, the Web enables a self-organizing community whose interaction can generate ideas at an unprecedented pace and scale. This shifts the locus of power away from institutions and hierarchies toward individuals and communities. The capacity to influence, criticize, and advocate is now more easily within the grasp of citizens and consumers who can quickly band together to make their voices heard.

Time magazine highlighted this phenomenon in December 2006 when it announced its Person of the Year. Instead of selecting an individual whose profile and substantial achievements reflected the assumption that history is shaped by the few, the famous, and the powerful, the magazine chose "You." Announcing its provocative selection, the magazine explained that "the new Web is a very different thing. It's a tool for bringing together the small contributions of millions of people and making them matter. Silicon Valley consultants call it Web 2.0, as if it were a new version of some old software. But it's really a revolution.... This is an opportunity to build a new kind of international understanding, not politician to politician, great man to great man, but citizen to citizen, person to person."⁴

One aspect of this revolution is the user's demand for a more active role. This is most obvious in the attitudes of those who have grown up with the Web. A recent Australian newspaper article⁵ analysed the media habits of Generation Y (those born approximately between 1977 and 1995) and highlighted the new values of this group. Discussing new social networking sites such as MySpace and YouTube, the article points out that these sites "are created by them and are for them, not aimed at them ... They are entertaining, give users a strong sense of community and give people a strong sense of control." Rather than being slaves to TV, radio, or newspapers, members of Generation Y prefer devices that allow them to choose the media content they receive. "They are very skeptical about 'talk at' media like TV, newspapers, and outdoor ads ... They do not want to be passive consumers." Mobility is one of the main characteristics of this generation. They lead lives that flow from activity to activity but want to stay connected all the time, informed and entertained via their mobile phones and other portable devices. Increasingly, these consumers are interested in media products "in which they can get involved." Authenticity is a function of

³ For example, the network can give different priorities to different kinds of traffic (e.g., data versus voice), different applications, or, indeed, particular kinds of messages within applications. Or it can shape interactions on the network by giving varying capabilities to different users depending on events, actions, or profiles.

⁴ <http://www.time.com/time/magazine/article/0,9171,1569514,00.html>

⁵ "A Lost Audience: The Mass Market," *Australian Financial Review*, September 30–October 1, 2006

engagement, not just consumption. They want brands to stop talking at them and to start engaging them in more personal, interactive ways.

Changes in the attitudes of young people provide a hint about the direction in which the world is heading, but we believe the process is only beginning. As more and more people and things are connected, traditional location- and organization-constrained ways of getting things done will give way to new models that place more power in the hands of the end user. The most innovative organizations in the public and private sectors have recognized this trend for some time, but over the next 10 years it is going to be the key issue for every organization — no matter how traditional their operations are today.

4. The Connected Republic

Two years ago, the Cisco Internet Business Solutions Group (IBSG) set out its vision of the potential of e-government in a book called *The Connected Republic: Changing the Way We Govern*. We chose this title in tribute to the city-state democracies of ancient Greece and to highlight the possibility that now exists of creating an environment where citizens reconnect with each other, with their elected leaders, and with their public institutions. We wanted to emphasize the potential of technology not just to improve public service delivery, but to change the very business of governing.

We suggested that the e-government project would fulfill its potential to the extent that it became:

- Central to the work and purpose of the public sector and the public policy process.
- Pervasive and invisible as it impacts the larger concerns of public sector reform, democratic renewal, and the changing role of government in the knowledge economy.
- Synonymous with what government is about — orchestrating and sometimes leading the creation of public value by putting people and communities at the center of responsive networks of knowledge, service, trust, and accountability.

Updating our vision, we remain committed to a belief in the transformation of the public sector based on citizen empowerment. In our view, the evolution of new communication and collaboration tools, enabled and accelerated by the network, provides a unique opportunity to empower citizens and to bring them together in new ways. The technology combines with (and, to a large extent, drives) a way of thinking about how individuals engage with companies and governments that is not only going to produce better, more responsive commercial and public services, but also stronger communities.

We believe these trends are particularly relevant given the nature of problems confronting the public sector. Increasingly, these issues are not susceptible to simple solutions delivered by a single agency. Rather, skill and expertise need to be drawn from a range of organizations and people who might nominally occupy a place in the private, public, or nonprofit sector, but whose real value is measured by their contribution to a complex value chain. We are shifting from a public sector of large, monolithic institutions to a world of consumers, businesses, citizens, and governments working together in new and surprising ways.

The ability to connect and collaborate is not just an enabler of this new world — it actually defines that world and its potential. If we take MySpace, YouTube, blogs⁶, wikis⁷, and the whole paraphernalia of social networking as a proxy for this new, connected world, what are its defining characteristics? These

⁶ A blog is a user-generated Website where entries are made in a journal format and displayed in reverse chronological order. Blogs often provide commentary or news on a particular subject, such as food or politics; some function as personal online diaries. A typical blog combines text, images, and links to other blogs, Web pages, and other media related to its topic. The ability for readers to leave comments in an interactive format is an important part of most early blogs. (Source: <http://en.wikipedia.org/wiki/Blog>)

⁷ A wiki is a Website that allows visitors to add, remove, and otherwise edit and change content, typically without the need for registration. It also allows for linking among any number of pages. This ease of interaction and operation makes a wiki an effective tool for mass, collaborative authoring. (Source: <http://en.wikipedia.org/wiki/Wiki>). Perhaps the best-known example is Wikipedia itself — an encyclopedia collectively produced by volunteer Web users who supplement and edit each other's content.

ventures highlight the instinct for “connecting” and the idea of community. The network becomes much more than just a way to transport packets of data, sound, or images; it is the platform that makes it easier for people and ideas to come together. The point is not to make the video or write the blog. The point is to share it with someone and get a response. The value of the network — which connects you to that video, blog, government service, discussion group, or school web site — is the community it enables.

Sometimes the connections are not between people but between things — physical assets that become nodes on the network capable of sharing information with each other. So now buildings can generate data about energy consumption and water use, and share that information over the network with other databases or with people who make key environmental and safety decisions. Farmers can remotely monitor irrigation systems to check the flow of water or gather alerts when things have gone wrong and need to be fixed.

The possibilities are endless, but there are risks. Protecting people’s privacy, fashioning robust schemes of identity management, securing the torrents of data moving across the network, and protecting the freedom of people to make choices for themselves and their families are all issues that need to be high on the policy agenda. So, too, is the concern about closing gaps in education, resources, and skills that, left unattended, will result in disconnected communities and a loss of social cohesion. But the underlying shift is undeniable and full of promise. The network has moved to the center as connectedness becomes the platform for productivity, social inclusion, and community.

5. Three Principles for a Connected World

So what does all this mean in practice? How should the public sector respond to a world where everyone is connected? In our view, there are three imperatives for success in a connected world:

1. Use the network as a platform for collaboration and creativity.
2. Make the best use of all available expertise and experience by “empowering the edge”.
3. Harness the “Power of Us” to create knowledge, solve problems, and deliver better services.

Use the Network as a Platform

The key to creating value in this new world is to provide a platform that makes it easier to connect people, places, and knowledge. A classic example is eBay, which is successful because it provides a space that makes it easy not just for anyone to become a buyer or seller, but for people to become trusted buyers and sellers at a distance and without face-to-face interaction. Another is Google Maps, now being employed by hundreds of people and communities to create new, customized knowledge using Google’s tools, data, and platform. Similarly, YouTube, MySpace, and Flickr are successful because they create spaces in which people can connect, communicate, and create.

For public sector organizations, taking a platform approach means maximizing the resources connected to the network, virtualizing those resources so that they are available at any point on the network, and continually making it easier for those connected by the network to interact with each other. This can have some surprising implications. Take the case of a U.S. hospital that faced difficulties in dealing with the wide range of languages spoken by people seeking care. Rather than paying for an expensive professional translation service in a small number of languages, the hospital gave video communication tools to the many staff members who speak several languages and then made this internal network of ad-hoc translators available to medical staff. In this case, the network connects people and skills in new patterns to create a capability that did not exist before and, as a result, creates real value — better, more responsive services for patients who cannot speak English.

Much of the e-government project’s focus has been on improving processes using the new tools of connectivity. What governments need to do now is make it easier for resources and expertise, wherever they are located, to combine and collaborate. The question is no longer “how can my organization solve this problem?” but rather “which resources can we harness to increase the public value we are seeking to

create?” For example, the financial sector has developed ways of interacting with customers that are typically far more sophisticated and customer-friendly than those of most tax departments. How could the public sector tap into that capacity and use it to deliver better service to customers? Or, take a different example. Often, welfare departments are most eager to serve the people who are hardest to reach. In a connected world, there are many new ways to reach out to them; perhaps the different skills and contacts of voluntary and community groups can become a virtual part of the welfare department’s service delivery platform, or maybe the community itself can be brought together and empowered to help itself. Increasingly, governments create value for citizens by orchestrating the expertise and resources of lots of different players from whose interactions flow the knowledge, service, trust, and accountability that citizens want.

Empower the Edge

The second key principle is to “empower the edge,” i.e., to reduce central control and give more power to end users and local units. This is possible, firstly, because different end users are connected with each other and can share information in real time and, secondly, because any central coordination can be carried out in real time via the network. This new approach maximizes the ability of everyone to contribute, while ensuring the outcome is tuned to the real rather than assumed preferences of those involved. For example, the United Kingdom has experimented with direct payments to people eligible for certain social services such as daycare, personal care, and respite care. Under this system, disabled people choose a provider and the appropriate mix of services themselves.

Empowerment is also about making better use of the insights, expertise, and experience dispersed across the community to accelerate the process of finding solutions or creating new opportunities. For example, a couple of years ago, the U.K. Parliament undertook an inquiry into domestic violence. The final recommendations were shaped by the insights of domestic violence “survivors” whose input was enabled by new, online consultation processes. For many of the women who contributed, it was the first time they had made a submission to a parliamentary inquiry and, given the difficult nature of the issues involved, the online opportunity provided a sense of privacy and security. The quality of the legislation that resulted was significantly improved because those women at the edge of the debate found a way to speak and be heard. The virtue of enabling everyone to contribute is underlined in crisis situations. Consider the RISEPAK Web portal, which was established after the 2005 Pakistan earthquake and provided an effective tool for coordinating the efforts of dozens of separate organizations. The portal contained pre-earthquake information on population, housing, electricity, and water in each of the 4,000 villages affected by the earthquake, and sought from the relief community and from individual’s information about damage, access, and relief. Information was solicited using standardized submission forms and could be sent using an online form or by text message, fax, or phone. The RISEPAK promise was that every member of the relief community — large or small, public or private — would be treated equally and that all information would be publicly available within 12 hours of submission. By enabling everyone to contribute, the portal secured the most comprehensive, up-to-date information and ensured that the efforts of dozens of organizations had the maximum impact.

As this example illustrates, the ability of large numbers of actors to know, in real time, what all the others are doing eliminates the traditional assumption that effective coordination requires central control. This dramatic change creates all sorts of new possibilities. In the world of distributed networking, the edge can be as powerful and as influential as the center; indeed, the whole concept of “edge” and “center” becomes ambiguous. In this new world, there are huge opportunities to empower people and communities whose distance from what was once defined as the center (the company’s headquarters, the capital city, Town Hall) used to hinder their ability to influence what happened to them or their community.

For the public sector, empowerment involves putting tools and resources at the disposal of users and creating spaces and opportunities for communities to form and solve their own problems. Rather than simply trying to improve service delivery, the public sector needs to explore ways of expanding choice and

involving citizens in the co-creation of services. One example of this is the Earth 911 initiative⁸ in the United States. Together, a range of nonprofit, government, and commercial organizations created a platform from which people can pull information to support local environmental projects. Under the banner of “Make Every Day Earth Day,” Earth 911 is a public-purpose organization that confronts a key policy challenge — sustainability and a cleaner environment — without using a traditional public sector delivery model. Through Earth 911, all Americans are empowered with accurate, local information and are invited to play an active part in efforts to protect their community’s environment.

6. Harness the “Power of Us”

Empowerment is important, but it is not just a matter of empowering individuals. The fundamental feature of a connected world is that it brings people together in new ways; the public sector needs to work out how it can exploit the possibilities this creates. Which communities can it bring together to create public value, and how can it ensure those communities flourish? One success has been the United Kingdom’s “rightsnet” platform⁹. This was created by the London Advice Services Alliance, which saw the potential of bringing together the many organizations and individuals offering advice to U.K. residents about their welfare rights. Advisers who use the platform get news on benefits changes, training courses, and job opportunities, but they can also share resources, raise issues, and start discussions with other users of the platform. As a group, they have a strong common purpose, and although they belong to a wide range of organizations, there are benefits for each member in being part of the community.

A different example is Curriki.org,¹⁰ whose ambition is “to improve education around the world by empowering teachers, students, and parents with user-created, open-source curricula.” Curriki, a play on the words “curriculum” and “wiki,” is a nonprofit organization that is building a Web-based, open-source curriculum, providing universal access to free curricula and instructional materials for grades K-12. Initially, the project is focusing on developing an online repository in the areas of mathematics, science, technology, reading and language arts, and foreign languages. The initiative is all about creating a community of educators, parents, and students, and is powered by a belief that “technology can play a crucial role in breaking down the barriers of the Education Divide — the division of inequality that prevents children worldwide from access to quality education.”

The communities that create public value may bring together a wide range of individuals or a specific group of public servants. In the United States, for example, the Office of the Director of National Intelligence has sought to overcome past failures to pull together separate pieces of information by creating three nonpublic, internal wikis where intelligence officers can directly share information and insights. As Deputy Assistant Director Richard Russell explains, Intellipedia was created so “analysts in different agencies that work [on] X or Y can go in and see what other people are doing on subject X or Y and actually add in their two cents worth . . . or documents that they have.”¹¹

7. Changing the Way We Govern

Adopting the three principles we have outlined will mean transformational change. As well as changing the way the public sector operates, these principles can help transform the relationship between citizens and the state, breaking down the gulf that often exists between citizens and public institutions, and between citizens and their representatives.

⁸ <http://www.earth911.org>

⁹ <http://www.rightsnet.org.uk/>

¹⁰ <http://www.curriki.org/xwiki/bin/view/Main/>

¹¹ <http://www.nationaldefensemagazine.org/issues/2006/November/SecurityBeat.htm#Wik>. Gartner’s e-government blog notes a number of other examples of public sector agencies using wikis and similar tools. The U.S. Environmental Protection Agency is using a wiki to coordinate its content development project, while Alaska’s Division of Public Assistance has used wikis for more than a year to support collaboration and share best practices among local councils. Both the U.S. Patent and Trademark Office and its U.K. counterpart are considering a wiki approach to the patent-approval process.

The challenge is to imagine a business model of governing that is driven by the instincts and processes of what one recent study described as a world “wide open.”¹² The success of ventures like Linux, Wikipedia, and YouTube tells us something about what makes this business model work. They are “volunteer-powered, Internet-enabled, and geographically dispersed.” They embody “a new way of creating knowledge that combines an open and democratic ethos with an extraordinary ability to produce work of high quality and on a huge scale.”

The emerging model (in both the public and private sectors) is more organic and evolutionary than the traditional approach. It is less fixated on what the center thinks and more interested in finding, connecting, and then supporting those with the knowledge and experience necessary to effect change. In this model, information is widely shared because that’s how it becomes powerful. Open, collaborative systems, using the network, are more efficient because they offer a quicker way to learn and to respond to changing circumstances.¹³

In most areas, delivering the maximum amount of public value will involve adopting methods that change the distribution of power between consumers and businesses, and between government and citizens. These methods rely on, and feed, an ethic of high trust and openness. They assume that knowledge, experience, expertise, and insight are dispersed throughout communities and at all levels of formal and informal power. From this perspective, orchestration becomes a key public sector role. Over and above the enduring obligations of regulation, redistribution, and security, a central task of government is to find ways to bring together dispersed knowledge and turn it into a practical form on which to base policies, programs, and initiatives.

Doing this will involve adopting a new approach. In the Connected Republic, public sector organizations will develop an intense and sustained “search and sense” function, inviting citizens to play a much more active role in the configuration of services and in the shaping of public policy agendas. This new pattern of interaction will draw on, and accelerate, a major cultural shift in the public sector, introducing new skills and attitudes into public life.

8. A New Operating Model for the Public Sector

Within this broader change in the nature of government, we believe more and more organizations will adopt an operating model that Cisco describes as the Networked Virtual Organization (NVO). This approach is about organizations ceasing attempts to do everything for themselves and, instead, pulling in the most appropriate resources, regardless of where they are physically located or whether they would traditionally be seen as being in the public, private, or voluntary/community sector. Combining networked technologies and deep business process reform, the aim is to create organizations whose value — in terms of their ability to impact large, ambitious, and shared outcomes — is much more than the sum of their parts.

The NVO model involves public agencies becoming more discerning about the functions that are core to their real mission and looking to partner with other organizations to deliver non-core functions. This will lead to an increasing reliance on shared service models that can support the particular purposes of individual agencies while, at the same time, delivering significant productivity improvements across the public sector. Governments will have to draw on the ability to share and, therefore, to standardize many of the back-end systems on which individual agencies rely to be effective.

The need to avoid waste and inefficiencies in functions like HR, finance, technology, procurement, and some aspects of customer service (identity management, privacy, payments, and so forth) is only likely to

¹² “Wide Open: Open Source Methods and Their Future Potential,” Geoff Mulgan, Tom Steinberg, and Omar Salem, Demos UK, 2005

¹³ “Network-Centric Thinking: The Internet’s Challenge to Ego-Centric Institutions,” Jed Miller and Rob Stuart, <http://journal.planetwork.net/article.php?lab=miller0704>

grow, encouraging the development of government-wide architectures that treat government as if it were a single enterprise. Service-oriented architectures will be the norm, enabled by central, common standards and a commitment to core information and data standards. It will be crucial, however, to ensure that this activity does not lead to new, disconnected, and monolithic shared-service silos. As one commentator put it recently, the challenge is to avoid building “grand new data processing cathedrals” and, instead, develop “a more flexible bazaar of loosely coupled services.”¹⁴

Governments are also likely to use public-private partnerships and a combination of outsourcing, insourcing, and offshoring to orchestrate a richer mix of organizational units that, independent and distinct, combine their resources and skills to serve common customer- or citizen-focused outcomes. They should also look to empower intermediary organizations in the public, private, or voluntary community sector whose capabilities, values, and skills are often much better suited to the specific needs of a service or activity than any single organization could provide.

Adopting this new NVO model will involve a much greater range of organizations in the delivery of public services and the creation of public value. The boundaries between the different sectors will be much less clear-cut than in the past, and individual public sector bodies may well be smaller as they move from traditional delivery roles to a greater emphasis on orchestrating and empowering. Rather than a vertically organized public sector mass-producing service for passive recipients, we are likely to move to a more flexible and dynamic “plug-and-play” approach where a host of resources are pulled together in different ways to meet the changing outcomes citizens want.

All of this will have a major impact on what it is like to work in the public sector. There will be a gradual evolution of new forms of coordination and control. Governments will place a premium on the skills of orchestration and facilitation, and on the ability to recognize the credibility and authority of sources of policy insight and advice outside the public sector. It will also involve developing new accountability methods that can match the radically dispersed and collaborative nature of public purpose work. Governments will need to make their own workplaces flatter, more connected, and less hierarchical — more in tune with the values and behavior of the talented people who need to be attracted to the public sector.

9. A Changed Relationship with Citizens

As well as delivering more flexible and efficient organizations, the approach we have described will change the relationship between citizens and the state. Today’s citizens want fully digital services that deliver service 24 hours a day, seven days a week. They want the different channels through which they can access services to provide a consistent, mutually supportive experience; and rather than receiving a mass of separate services, they expect integrated and personalized services that reflect the contours of their lives.

It is not, however, just a matter of providing citizens with convenient, seamless, and personalized ways of interacting with government. Citizens need to be given a much greater role in shaping public services. “Black box” government, where dedicated civil servants try to work out which services will suit people best, needs to give way to transparent government where citizens themselves can see and intervene in debates about how services can be made more citizen-centric. Governments are rightly looking to build services around citizen needs, but true citizen-centricity involves enabling citizens themselves to drive change.

As part of its transformational government strategy, the United Kingdom has sought to do this by creating the new role of group customer director (older people and farmers being the first two groups targeted). This is a significant move, but the real test will be the extent to which the targeted groups are themselves

¹⁴ “Government Cathedrals, Government Bazaars,” Owen Barder, Public Finance magazine, August 2006

directly and transparently involved in the process of driving change. The new group directors will sponsor research into the needs of their group and lead service design. They should also seek to involve the community itself by, for example, blogging the progress of their work or putting discussions and research onto the Web so that interested citizens from the targeted group (and outside it) can enrich the debate with their comments and insights.

As people experience more responsive forms of interaction in other aspects of their lives, demands for recognition and engagement are likely to increase. Public sector leaders will, therefore, need to find new ways for citizens to influence public programs and services. Part of the answer will involve being more open to feedback from service users in a process of engagement that goes well beyond traditional notions of consultation and customer satisfaction.

Beyond that, the challenge is to introduce opportunities for citizens to pull the resources and the information they need to make decisions for themselves. The shift to a self-service culture, at its best and in the right context, makes a huge contribution to reframing the citizen-government relationship. This capacity for people to use the Web to connect “small pieces” into larger narratives that they drive and own is both powerful and appealing. Gradually, the technologies of connection and collaboration are fashioning a virtual “civic commons,”¹⁵ a digital version of the spaces traditionally set aside for citizens to initiate and sustain their own democratic conversations.

At a deeper level, the test for governments will be to construct productive relationships with citizens, making sure that the way the rules — and the possibilities for action — that are negotiated reflect genuinely democratic instincts. This will, in turn, change citizen expectations at those “moments of truth” when they come into contact with traditional public sector services and processes. People are starting to get used to the idea that in some circumstances, they can set the agenda or at least have a significant influence over its content and priorities. If that is true, those same people are unlikely to be impressed by traditional “consultation” processes that tend to invite comments and contributions only after someone else has set the agenda.

There are plenty of unknowns as governments and citizens work to give some of these instincts for engagement and involvement appropriate form. In some measure, these demands call for new patterns of authority and control that governments find difficult, especially to the extent they do not always appear to be matched by consequent shifts in accountability. Politicians and senior government executives feel less able to plan and manage (and, therefore, control) in this environment -- an unsettling sensation if you are trying to manage difficult and complex policy processes. Nonetheless, we believe a process of adjustment and accommodation will gradually remake our expectations of how governments work and how citizens engage.

10. Taking E-Government to the Next Level

For the past 10 years, governments around the world have invested in major programs of technology-enabled change in the public sector under the label “e-government.” Similarly, there has been much effort invested in creating an underlying policy framework to support these changes. Our emphasis on broader transformation is not intended to disparage that work. On the contrary, the new possibilities we are describing build on that investment and assume it will yield its intended benefits.

This foundational work includes the following key elements:

- Creating a suite of robust, enabling business processes and systems that all agencies need, and that can increasingly be provided on a whole-of-government basis, including identity management, authentication, security, information management policies and standards, privacy, and payment and billing systems.

¹⁵ http://www.citizenonline.org.uk/site/media/documents/925_Realising%20Democracy%20Online.pdf

- Completing and improving core electronic service delivery systems, ensuring that they provide a reliable and increasingly convenient experience for citizens and service providers.
- Investing in the basic communications infrastructure, including “real” broadband networks whose capacity and architecture can accommodate evolving services and applications.
- Refining, improving, and integrating the various service delivery platforms on which citizens rely for quick, safe, and easy access to information and services, and as communication channels to provide feedback to agencies.

Far from rendering these investments redundant, the Connected Republic vision assumes governments will continue their efforts to realize the benefits technology can deliver to improve basic transactions such as obtaining a business license, paying a parking fine, or receiving reimbursement from your health insurance fund. Getting these essentials right is necessary to achieve basic efficiencies, but it is also a precondition for being able to think and act as an enterprise (“one government”) and for earning the trust and confidence of the public so they will participate.

As these basic capabilities become an established part of the way the public sector works, expectations will rise, and governments will need to focus on a deliberate program of innovation both at an agency level and across key, whole-of-government functions. The innovation process will bring together those who are pushing boundaries in the design and delivery of public services. Often, the empowered edge (such as the district office, or a not-for-profit organization or group of individuals) will be the most fertile ground for new ideas, since it is here that the constraints that impact the pace and scope of innovation are easiest to overcome. What is important is the ability to see the possibility for new thinking and to nurture it, creating space within which it can develop and grow.

As innovation takes root, we predict a number of changes:

- The role of technology will evolve from an enabler to profound change agent, transforming the structure and culture of government and often representing an integral part of the solution to the very challenges to which its pervasive influence is giving rise.
- The shape and focus of government programs and services will become steadily more influenced by the views of the people they serve, whose preferences will have greater influence on priority setting and program design.
- Governments will invest more heavily in “sense and respond” capabilities, systematically seeking out the views, experience, and expertise of customers and service users.
- Governments themselves, as large and complex enterprises, will take many of the same collaborative tools and business models they use with citizens and start applying them to the way they work internally. As a consequence, public sector organizations will become more agile, more efficient, and more attractive to the talented people they need to attract.

Ultimately, governments should start to harness the capabilities of the network to achieve their central policy ambitions: economic resilience and competitive differentiation, quality education and skills for all, better health and aged care, sustainability, and social inclusion. At this point, e-government would cease to be exclusively about technology-enabled public services reform and would start to play a central role in larger conversations about national economic and social transformation.

11. Challenges and Obstacles

Grasping these opportunities is not going to be easy. The scale of the transformation is huge. Furthermore, it involves not just organizational change, but the development of new and different cultures. As the e-government project has illustrated, there are limitations to the speed with which major change programs within government agencies can be carried out.

There are other barriers. Some are legislative. For example, in Germany, a plan to create a shared service facility that would accelerate the printing of tax statements by using external organizations was shelved because, by law, this task must be carried out by a tax officer employed by the Ministry of Finance. Other barriers are particular to the new world we are entering. New forms of regulatory control and centralized standards, including areas such as authentication, privacy, and security, must be developed to enable collaborative networks without increasing risks for citizens or governments. We have to find ways to make it “safe to play” in this more connected public realm, using an instinctive concern for privacy and security as a catalyst for legislative reform and improved practices across government and in society.

Clearly, as the range and mix of resources involved in delivering services grows, the value chain becomes more complex, thus raising significant service availability assurance issues, particularly in relation to critical public services. There are also issues regarding equity. We cannot ignore the needs of a wide range of users, including older citizens, whose ability to access new, technology-enabled processes may be less certain. There are risks, too, that in the still-evolving models of communication and collaboration around Web 2.0, public debate will be dominated by the relative few (well-educated, technically proficient, and well-resourced) at the expense of a genuinely more inclusive and democratic conversation.

These are all important issues, and no one is suggesting that providing better technology to access information and services is, by itself, a solution. Rather, as societies move toward a Connected Republic model, action will be needed in three areas:

- Capacity: governments will need to take action to develop not just the technological tools for engagement, but also the civic capacity to use those tools.
- Equity: governments will need to ensure that those who are unwilling or unable to participate are not left behind or unfairly disadvantaged.
- Accountability and responsibility: in the complex world of small pieces, loosely joined, governments will have to develop new tools to ensure there are proper systems in place to prevent responsibility from falling between the cracks.

12. Conclusion

We have argued that a connected world offers huge opportunities for the public sector. This new world favors a more collaborative and flexible approach to getting things done and provides a platform for empowerment, choice, and personalization. Public sector organizations can build a new kind of relationship with citizens, putting skills and resources directly at their disposal and enabling them to play a much greater role in public policy. They can also harness the “power of us” and pull people together to create public value in new ways.

The new capabilities of social networking and collaboration do not, of course, render obsolete the enduring responsibilities of good government. On the contrary, they bring those obligations into sharper focus. At its heart, government is still about creating the policy, technology, and organizational infrastructure that delivers services, trust, and accountability. The question is not whether technology replaces politicians and parliaments, but rather how it can contribute to the larger task of renovating the public realm so people can be part of a more open and meaningful process of debate and decision.

The challenge here reflects the crisis in mediation that society faces as the roles of the media, the church, schools and universities, and other social and political institutions such as unions and non-government organizations evolve. In the Connected Republic, these institutions (and those that might think of replacing them) are invited to test themselves against the principles of the larger revolution that places a premium on inclusion, spreading the capacity for engagement much more widely and increasing the pace of innovation by shifting power from the center to the edge. Mediating institutions need to earn, or revalidate, their credentials according to these exacting standards or risk becoming weak and marginalized.

The fact is, for all e-government's successes of the past decade, there is still much to be done. This includes realizing the benefits of existing programs of reform and enabling the kinds of improvements in public sector delivery that citizens are increasingly seeking. What the Connected Republic vision suggests, however, is that as governments contemplate the continuing political, financial, and human investment needed to drive reform forward, they also need to broaden its scope. Governments must catch the next transition—not by dumping the ambitions of the past 10 years, but by adding to them.

Progress will be a combination of bold vision, steady investment in new skills and capabilities, and patient, competent execution. The emergence of the connected world—a distributed network of small pieces, loosely joined—offers the possibility of transforming the public sector, changing the role of government, and enabling citizens to be more actively involved in shaping services and public sector decision making. In our view, the promise of the Connected Republic should be at the heart of every government's plans for modernization and reform.

Key Messages:

- Pervasive connectedness has changed the world forever.
- The public sector must adapt to this new world, just as other sectors are doing.
- E-government needs to become part of a broader transformation that recognizes the transition to new, networked models and focuses on connecting and empowering citizens.
- What has already been done in e-government has not been wasted. Governments should press on and ensure that investments and reforms deliver intended results.
- Profound transformation and system change are both possible and necessary. They will take time, careful investment, and sustained leadership, but they are essential if government is to maximize the public value it delivers for citizens.

Further reading and useful web sites

- E-Government for Development Success and Failure Rates of E-Government in Developing/Transitional Countries: Overview Richard Heeks, IDPM, University of Manchester, U.K. 2003 <http://www.egov4dev.org/sfoverview.htm>
- Common causes of project failure, U.K. Office of Government Commerce (OGC), 2001 <http://www.ogc.gov.uk/sdtoolkit/Reference/ogclibrary/bestpracticebriefings/causesprojfailure.pdf>
- OGC Gateway™ Reviews, U.K. Office of Government Commerce (OGC) <http://www.ogc.gov.uk/index.asp?id=377>
- Project Management Maturity Model: v5, U.K. Office of Government Commerce (OGC), October 2002 http://www.ogc.gov.uk/sdtoolkit/reference/tools/PMMM_release_v5.pdf
- APM Group (APMG) <http://www.programmes.org/Web/Site/AboutUs/CompanyBackground.asp> was established in 1993 as the trading arm of the Association for Project Management and became independent in 2000. Since 1996, it has - on behalf of and in partnership with the OGC—developed and managed the accreditation of PRINCE2, Managing Successful Programmes (MSP), and the Management of Risk (MoR).
- International Project Management Association <http://www.ipma.ch/asp/>
- International Project Management Forum www.pmforum.org
- International Project Management Institute www.pmi.org
- The Standish Group (researchers into why projects fail) <http://www.standishgroup.com/sampleresearch/PDFpages/q3-spotlight.pdf>

KNOWLEDGE AND SEMANTIC TECHNOLOGIES FOR AGILE AND ADAPTIVE E-GOVERNMENT

Dr. Gregoris Mentzas

Abstract

Managing knowledge assets in government has proven to be a critical factor in reinventing public administration and facilitating improved service provision. In the present paper we argue that an enabler to knowledge management in e-government is the use of semantic technologies, which would allow information access and use based on machine-processable semantics of data. Specifically we outline research efforts to use semantic technologies in order to facilitate two critical issues in e-government: (a) supporting change management and agility within the back-office processes of public administrations; and (b) facilitating the development of adaptive front-office processes.

1. Introduction

Managing and leveraging knowledge within and across public administrations has become a critical skill for government agencies in the 21st century. There are many reasons for this. First there is a wealth of knowledge within public administrations; knowledge assets on the environment, on the social welfare, on politics and strategies, on judicial decisions, on practices, etc. are critical in taking decisions that affect the public. Second, public administrations may be considered huge knowledge-intensive organizations, since they are collecting and processing data, information and knowledge about citizens, companies and other administrations. Hence it is of utmost importance that public agencies successfully address the main Knowledge Management (KM) challenges, i.e. they are capable in capturing, organizing, sharing, distributing and exploiting their knowledge assets; see Mentzas et al (2001 and 2002).

The recent effort towards the Semantic Web (SW) and the associated technologies seem to provide interesting enablers for governments to address their KM challenges. The Semantic Web (SW) has been intended as a new generation of Web able to support automatic information access and use, based on machine-processable semantics of data. It relies on the principle of shared data, which means that any newly-defined data can be linked to the already existing data on the Web. In its current form, the data already available on the Web is not suitable for this principle. It is useful in the context it was created in, but not in another context, which makes it difficult (if not impossible) to use it on a large scale. This leads sometimes to duplication of information or even to the existence of contradictory information referring to the exact same thing. Without an easy way of reusing some agreed-upon standard definition of different data available on-line, the end user is overloaded with partially useless and misleading information. As a consequence, new technologies need to be developed for publishing and storing data. A second drawback of current Web technology is the difficulties any user has to face when trying to retrieve some information. This is usually done by using some search engines which search the Web based strictly on string matching, sometimes returning totally unexpected results. These mistakes could be overcome if the computers would be able to ‘understand’ the stored data, to differentiate between different meanings and interpretations of the same word. The SW uses ontologies as the backbone technology for the management of the formalized knowledge in the context of distributed systems.

This paper presents an overview of how semantic technologies can be used to address two critical issues in e-government: (a) supporting agility within the back-office processes of public administrations; and (b) facilitating the development of self-adaptive front-office processes.

The need for agility within government is mainly due to the permanent changes in the environment (political, economical and ecological) which in turn cause changes in the governments’ regulations that may affect public administration processes and systems. To reduce “time-to-market” with regards to new decisions, regulations, and law, it is necessary to equip public administration with tools supporting agile

response to changes. A change in one activity in a process or in one part of an e-government system may cause many problems in other parts of the same process or system. Therefore, there is a need for resolving changes in a systematic manner, ensuring overall consistency. Furthermore, these changes impose the need for updating the knowledge needed to perform the administrative process or use the e-government system, which is heterogeneous and fragmented. On the other hand, there is a growing need for e-government services to be adaptive to the needs of citizens and businesses. For e-government initiatives to succeed, public services should be organized in such a way as to serve every citizen individually. Since citizens pose different access possibilities, skills and motivation, service delivery should be tailored to the widest possible end-user population. This adaptivity means that all citizens have access to the public services in a manner which is enabling and satisfying. It requires not only personalized service delivery, but more important the extension of the service description by including dynamically changing citizens' needs.

In this paper we outline recent research work on using knowledge and semantic technologies to facilitate agility and adaptivity in e-government service provision. The next section briefly presents ontology management issues, which are a major component in semantic technologies, while section 3 of the paper outlines the synergies between semantic technologies and e-government. Section 4 describes the use of semantic technologies for facilitating agility in the internal workings of public administrations and section 5 outlines how semantic technologies may support the development of adaptive e-government services. The final section draws some conclusions and outlines areas for further work.

2. Ontology Engineering and Management

The word ontology has been used with very different meanings attached to it. Originating from philosophy, the term 'Ontology' was borrowed by the Knowledge Engineering Community. Since then, many have attempted to provide a comprehensive definition of "Ontology". Setting apart philosophical-related definitions, an appropriate and comprehensive AI-related definition of ontology is provided by Studer et al (1998) who have merged and explained the definitions given by Gruber (1993):

An ontology is a formal, explicit specification of a shared conceptualization. Conceptualization refers to an abstract model of some phenomenon in the world by having identified the relevant concepts of that phenomenon. Explicit means that the type of concepts used, and the constraints on their use are explicitly defined. Formal refers to the fact that the ontology should be machine-readable. Shared reflects the notion that an ontology captures consensual knowledge, that is, it is not private of some individual, but accepted by a group.

Another definition which highlights the more practical aspects of ontologies is provided by the W3C Recommendation (2004) according to which "an ontology defines the terms used to describe and represent an area of knowledge." Ontologies are used by people, databases, and applications that need to share domain information. Studer et al (1998) detail that a domain is a specific subject area or area of knowledge, like medicine, tool manufacturing, real estate, automobile repair, financial management, etc. Ontologies include computer-usable definitions of basic concepts in the domain and the relationships among them; they encode knowledge in a domain and also knowledge that spans domains. In this way, they make that knowledge reusable. Ontologies are usually expressed in a logic-based language, so that detailed, accurate, consistent, sound, and meaningful distinctions can be made among the classes, properties, and relations.

During the 1990s and the first years of this century many computer scientists and ontology engineers became interested in formalizing approaches for building ontologies from scratch and for reusing other ontologies in order to minimize the time and effort required for building ontologies. Until the mid-1990s this process was considered an art rather than an engineering activity, and each development team usually

followed their own set of methods for manually building ontologies. This lack of common and structured methodologies resulted in increased development times and limited reusability.

The first attempt to tackle the above issue was made in 1996, in the first workshop on Ontological Engineering that was held in conjunction with the 12th European Conference on Artificial Intelligence. The workshop's goal was to explore and propose a number of principles, design criteria and patterns, and rules of good practice for building ontologies. A second workshop was held in 1997 on the same topic in Stanford. One of the main aspects dealt with in this workshop was the use of methodologies for designing and evaluating ontologies. Since then, methodological aspects related to different activities of the ontology development process and its lifecycle are included in most of the international conferences on the Ontological Engineering field.

A generic framework that identifies the main activities that should be included in the ontology development process was defined as part of the METHONTOLOGY methodology for ontology construction; see Fernandez-Lopez et al (1997). These activities fall into three main categories: ontology management activities, ontology development activities and ontology support activities.

Ontology management activities include scheduling, control and quality assurance. The scheduling activity defines and orchestrates the tasks to be performed and estimates the time and the resources needed. This activity is essential in cases of abstract large-scale ontologies. The control activity monitors the executions of the tasks ensuring their appropriate execution and their timely completion. Finally, the quality assurance activity ensures that the quality of each and every product output (ontology, software and documentation) is satisfactory.

Ontology development activities are divided into pre-development, development and post-development activities. During the pre-development, the application domain of the ontology is analysed and the applications where the ontology will be integrated are identified. The reason for this is to determine inter alia whether it is possible or suitable to build the ontology. In the development, the specification activity details the reason why the ontology is being built and identifies its intended uses and users. The conceptualization activity is responsible for structuring the knowledge of the application domain transforming it into a meaningful knowledge model represented in a commonly understandable form. This representation is transformed into a formal machine-processable representation during the formalization activity using some formal ontology language. Finally, during the post-development, the maintenance activity updates and corrects the ontology if needed.

Ontology support activities consist of a series of activities that are performed in parallel with the development activities and are important to the development process. These activities are:

- Knowledge acquisition: The goal of the knowledge acquisition activity is to acquire the required knowledge for the application domain of the ontology from corresponding experts.
- Evaluation: The evaluation activity is constantly judging from a technical perspective the intermediate and the final results of the ontology development process.
- Integration: The integration activity takes place when already available ontologies are reused for building a new ontology.
- Merging: Merging refers to building a new ontology by unifying concepts, terminology, definitions, constraints, etc. from already available ontologies of the same domain.
- Alignment: The alignment activity maps different ontologies so that they can be used together without having been merged.
- Documentation: The documentation activity describes in a detailed, clear and exhaustive manner the ontology development process and its results.
- Configuration management: The configuration management controls the various versions of the ontology and its documentation.

A key issue in the ontology development process is the language in which the ontology will be implemented. In the past decade, many ontology implementation languages have been created and other general Knowledge Representation (KR) languages and systems have been used for implementing ontologies despite the fact that they were not specifically created for this purpose.

Generally, we can divide ontology languages into two categories. The first category contains a set of AI-based ontology languages, created at the beginning of the 1990s, and based on first order logic, frames and description logics. Some of these languages are KIF, CycL, Ontolingua, LOOM, OCML and FLogic. The second category refers to web-based ontology languages, the syntax of which is based on existing markup languages such as HTML and XML. In contrary to the AI-based ontology languages, the purposes of these markup languages are data representation and data exchange. Some of these languages, also known as ontology markup languages, are SHOE, XOL, RDF, and RDF Schema. RDF was developed by the W3C (the World Wide Web Consortium) as a semantic network based language to describe Web resources. It is a W3C Recommendation since 1999. The RDF Schema language was also built by the W3C as an extension to RDF with frame-based primitives. The combination of both RDF and RDF Schema is known as RDF(S). These languages have established the foundations of the Semantic Web Berners-Lee et al (2001). In this context three more languages have been developed as extensions to RDF(S): OIL Horrocks et al (2000), DAML+OIL Horrocks and van Harmelen (2001) and OWL Dean, M., G. Schreiber, et al (2004).

Building ontologies is difficult for three reasons. First, articulating knowledge in sufficient detail that it can be expressed in computationally effective formalisms is hard. Second, the scope of shared background knowledge underlying interactions of two agents can be enormous. For example, two doctors collaborating to reach a diagnosis might combine common sense conclusions based on a patient's lifestyle with their specialized knowledge. Third, there are unsolved problems in using large bodies of knowledge effectively, including selecting relevant subsets of knowledge, handling incomplete information, and resolving inconsistencies. These problems become even more acute in a changing environment.

3 Semantic Technologies meet eGovernment

Semantic technologies are defined as software technologies that allow the meaning of and associations among information to be known and processed at execution time. They are based on ontologies. Indeed, semantic technologies help solve the problems of application and data interoperability, improved search, discovery and content provisioning in knowledge-centric systems and dynamic integration across distributed systems. Semantic technologies are driving the next generation of the Web, the Semantic Web (SW), "a machine-understandable web of "smart data" and automated services that amplify the Web far beyond current capabilities" Berners-Lee et al (2001).

The Semantic Web (SW) is a vision of a Web as a source of meaningful content and services that can be interpreted by computer programs. To achieve its goals, it provides the necessary infrastructure for publishing and resolving ontological descriptions of terms and concepts. Additionally, it provides the necessary techniques for reasoning about these concepts, as well as resolving and mapping between ontologies, thus enabling semantic interoperability of web services through the identification (and mapping) of semantically similar concepts.

E-government has been recently facing existing problems in systems and information integration, information extraction and representation across heterogeneous organizations. E-government in particular faces a big challenge to achieve interoperability and integration taking into account differences in law, regulations, services, administrative process and different languages across regions and countries.

Such differences are related to a great variety of computer-based solutions at various levels to be integrated through standardization or mediation while at the same time taking into account all integration

levels, namely technical, semantic and process levels. In particular, integration of services and processes is the key aspect of integrating processes that involve a variety of objects with specific semantics.

On the other hand, the Semantic Web (SW) has been of interest to the research community for the last five years. The SW requires a large, dynamic, heterogeneous and shared information space to be effectively evaluated. Therefore, the combination of these two domains seems to be quite natural. The e-government domain can provide an ideal test bed for the SW research and SW technologies can be an ideal platform to achieve the vision of a knowledge-based, citizen-centric and citizen-empowering, distributed and integrated e-government. Due to its open architecture, e-government provides new research areas for SW, such as inter-portal search and building on top of distributed querying or discovery across distributed and heterogeneous resources. In addition, e-government has some specific features as opposed to traditional e-business scenarios which are of interest to SW research and on which SW research could be properly demonstrated. These include a high degree of formality of key areas such as law, high demands in security, trust and privacy, typical and sometimes extremely-long-running processes (e.g. urban planning) and many different stakeholders in the same process (e.g. citizen vs. municipality, county council, federal government).

Joint research efforts of e-government and SW communities are mainly apparent on a number of recent events such as the AAAI Spring Symposium on “Semantic Web meets EGovernment” held at Stanford (Abecker, Sheth, Mentzas and Stojanovic, 2006) or the dedicated workshop on “Semantic Web for E-Government” organized as part of ESWC2006 in Budva in Montenegro (Abecker, Mentzas and Stojanovic, 2006).

The goal of these events was to build a joint community of e-government and SW researchers. In addition, the number of United States and EU funded projects in the area of SW applied to e-government is increasing. While in Europe these projects (mainly funded through the Information Society Technologies program of the European Union Framework Programme for research) are focused primarily on integrated E-Government solutions with interoperability of multiple heterogeneous sites, projects in the United States, especially after 9/11, are mainly focused on the security aspects of e-government and thus results are usually not made public.

Due to their capability to deal with large volume of heterogeneous and distributed data, semantic technologies seem to be very suitable for the enhancement of e-government systems. Some of the current opportunities are:

- Integration -- There are currently many taxonomies, classification systems, schemas, etc. in use in government, each trapped in its own application. The integration of these various sources needs to be allowed and enabled.
- Search -- e-government retrieval systems have to take into account the increased granularity of informational resources, the manifold semantic differences in dealing with those resources, as well as the different search perspectives.
- Reusability -- One lesson that we have learned from component systems is that someone will string together your services in a way you never imagined; government services need to be factored so that this can happen, e.g. to realize one-stop government.
- Structuring -- The number of services offered by government agencies can be large and continuously changing. This calls for techniques to organize government services in a way they can be efficiently discovered and “understood”.
- Contextualization: Policies for the use of vocabularies, schemas, etc. have to be defined. Some will be used by many people, others will be restricted. An efficient approach for the context-aware e-government is needed.

The following two sections outline recent research work on using semantic technologies to facilitate agility in back-office processes and adaptivity in front-office portals in e-government.

4. Semantic Technologies for Agile e-Government

Knowledge in Public Administration

Knowledge has been and still is government's most important resource. The presence of highly trained, legally educated and specialized civil servants has been considered as one of the main characteristics of government. Since knowledge is regularly localized or even personal and difficult to share, it becomes immediately evident that even though there is indeed a lot of knowledge, it is not necessarily available anywhere, anytime for anybody. This means that not all parts of a public organization can necessarily benefit from that knowledge. Consequently, a lot of "reinventing the wheel" is going on in public administration. Even worse, a recently performed study shows that a frequently reported problem regarding users' satisfaction with e-government is the heterogeneity of decisions, i.e. the decision process still heavily depends on the knowledge of a public servant; see Institute for Citizen-Centred Services (2004). Indeed, in case-handling the public servants have a certain room for discretion. They may ignore some relevant information given by a citizen, or simply not ask for it. If the fit between the situation of the citizen and the applicable rules is not completely clear, they may assume a certain fit at their discretion. This puts forward the issue of transparency of the decision making process, which is one of the strategic objectives of e-government.

Therefore, it is crucial to understand knowledge in public administration as belonging to the human domain (tacit knowledge) and not only as a material object (explicit knowledge). Tacit knowledge cannot be easily managed. It is created, developed and distributed in processes of human action and interaction.

On the other hand, several factors make knowledge in public administrations subject to continual change:

- First, the environment in which an e-government system operates can change, thereby invalidating assumptions made when the system was built. For example, new laws and regulations require the adaptation of tacit knowledge;
- Second, public servants' requirements often change after the e-government system has been built, warranting system adaptation. For example, hiring new employees might lead to low competencies and greater diversity in the government, which the system must reflect;
- Third, the processing of unpredictable requests and exceptions gives rise to unanticipated "knowledge needs". Increasing citizen migration and movement creates complex cases for public administrations.

Existing approaches for knowledge management in e-government focus mainly on the efficient management of a particular, isolated knowledge resource and on supporting only message-based communication between public administrators. Moreover, the changes that affect the system are resolved and propagated in an ad-hoc manner. However, the demands for knowledge-based e-government are much higher.

First, the existing approaches do not take into account the increased granularity of informational resources and the manifold semantic differences in dealing with those resources, which is one of the research challenges of the knowledge-enhanced e-government.

Second, due to the complexity of the decision making processes, effective knowledge management requires the creation of a supportive, collaborative culture while eliminating traditional rivalries. Moreover, many administrative processes are collaborative, and since their course is not predetermined, it is often up to the public servant in charge of a process step to determine what should be done next. Other persons working on the process should therefore be made aware of the current status and of past actions.

Third, the usage of existing knowledge resources is indeed a valid aspiration, but for realizing a learning e-government, the crucial question is how to create new knowledge. Since the key to knowledge creation lies in the mobilization and conversion of tacit knowledge see Nonaka and Takeuchi (1995), the focus of the e-government organizational memory should be shifted from explicit to tacit knowledge. This

practically means that written documentation should be enriched with the knowledge that public servants have drawn from using the documents and/or replaced by communication among team members.

Finally, ad hoc management of the changes in e-government systems might work in the short term, but to avoid unnecessary complexity and failures in the long run, management must be done in a systematic way. To improve change propagation speed and to reduce modification costs, the knowledge that a public servant uses in making decisions must be efficiently reedited. If the underlying knowledge is not up-to-date, then the reliability, accuracy and effectiveness of the e-government system decrease significantly. Moreover, as the number of administrative services increases, the complexity of change management increases respectively. It is necessary to provide support for propagating changes to all dependent artifacts by ensuring the consistency of the whole system. In other words, a knowledge management approach that enables agile response to frequent and many changes in the environment is needed.

Research towards agile knowledge-based e-government

In the following paragraphs we describe a research approach towards agile knowledge based e-government; see also Stojanovic, Mentzas and Apostolou (2006). Figure 1 illustrates the above presented problems in existing e-government systems; Figure 2 shows how our current research approach attempts to address these problems.

More specifically, our research efforts intend to provide:

- an integrated knowledge space (instead of a set of isolated and heterogeneous knowledge resources) that will unify different perspectives and interpretations of knowledge resources and will enable their treatment on a far more fine grained level: now any bit of information or any knowledge object could be given identity (so called virtual content) and assigned attributes (metadata) allowing for more sophisticated applications and services in e-government;
- a collaborative working environment (instead of a single person decision making process) that will bring every public servant to the same level of effectiveness and productivity and will ensure more efficient knowledge sharing by guaranteeing at the same time the reliability and the consistency of the decision making process;
- a change management system (instead of ad-hoc management of changes) that will ensure the harmonization of requests for changes, resolution of changes in a systematic way and their consistent and unified propagation to the collaborative and knowledge space, in order to ensure the high quality of the decision-making process;
- a platform for the proactive delivery of knowledge (instead of an one-way knowledge access) that enables the creation of an adaptable knowledge sharing environment through learning from the collaboration between public servants and their interaction with the knowledge repository and supporting in that way the full empowerment of public servants.

In the aforementioned ways our research provides a framework for an agile knowledge-based e-government, which enables the efficient satisfaction of “unpredictable” knowledge needs of public administrators in order to ensure the high and homogeneous quality of the decision making process, especially in a highly changing environment.

Due to their formal nature, semantic technologies seem to promise support for resolving the previously mentioned drawbacks in existing knowledge management systems for e-government. Indeed, the integration of the heterogeneous and fragmented knowledge sources can be done on a common conceptual (ontological) level. This level will support a unified view on the usage of knowledge sources that is a prerequisite for an efficient learning process. Next, an ontology-based approach can be performed for the explicitation and the diffusion of personal information spaces. Finally, the formal and unified representation of changes using an ontology will ensure their harmonization and consistent propagation through the ontology-based knowledge-and collaboration-spaces.

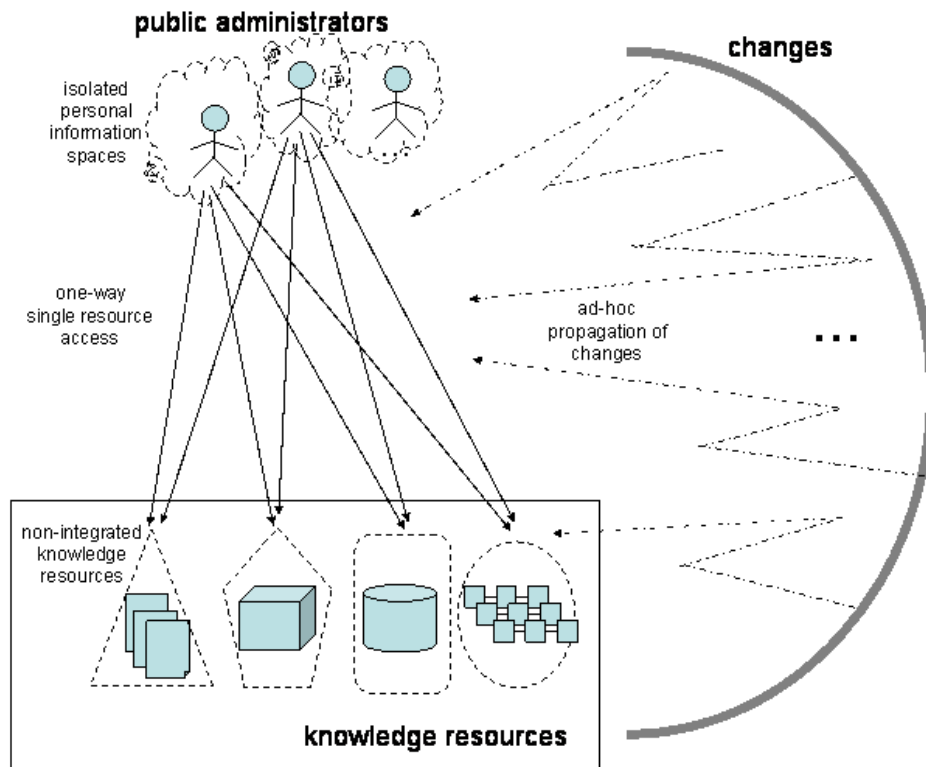


Figure 1: As-Is situation

Based on the analysis illustrated in Figures 1 and 2 and the need for applying semantic technologies discussed above, we have identified three main technological components for our research prototype for agile e-government (Figure 3).

(i) Semantic-based change management ensures the high quality of the knowledge update (reediting) process by:

- developing a change management process that will enable the consistent propagation of changes to each knowledge stakeholder in order to ensure the quality of the decision making process;
- formal and explicit modelling of the changes in public regulations and their relations to the depending artefacts in the form of the Change Ontology, which will serve as the backbone of the change management approach;
- developing methods and tools for verification of an existing knowledge repository in order to make it easier to understand and cheaper to manage without any loss of information content;
- developing methods and tools for simulation in order to illustrate, in an animate manner, the impact of simulated changes or decisions related to the administrative processes;

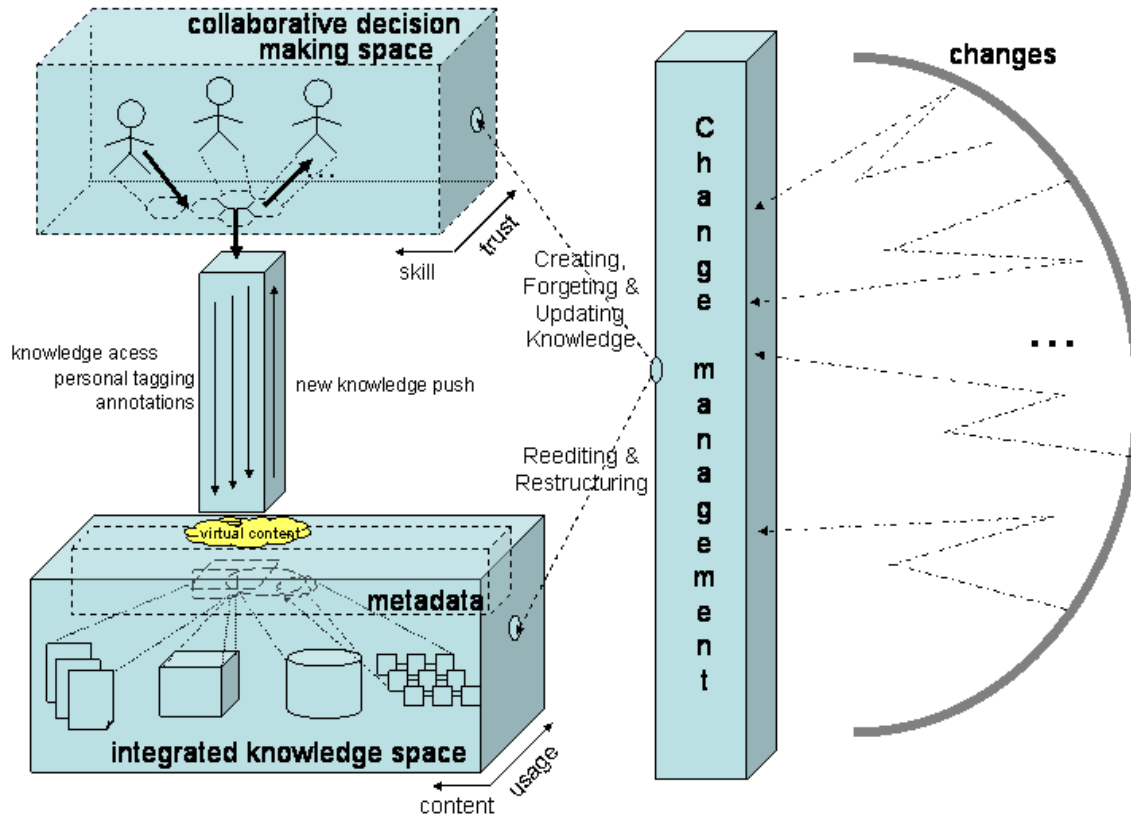


Figure 2: To-Be situation enabled by semantic agile e-government

(ii) A semantic-based content management system enables efficient provision of knowledge in the context of a public administration process by:

- semi-automatic population of the Information ontology by using Text Mining methods (Ontology Learning).
- developing methods and tools for ontology-based tagging of: (i) the content of a knowledge item, (ii) usage of an item and (iii) the relations between particular items.
- developing methods and tools for realizing context-aware searching for virtual content.
- developing methods and tools for an editorial process, to satisfy the knowledge items evaluation requirements.

(iii) A semantic-based Groupware system supports more efficient knowledge sharing by developing:

- methods and tools for ontology-based tagging the interaction between public administrators.
- methods and tools for enabling the building of community of practice from interaction logs and their specific vocabularies by social tagging.
- methods and tools for collaborative knowledge creation.
- methods and tools for pushing of knowledge and for searching for experts.

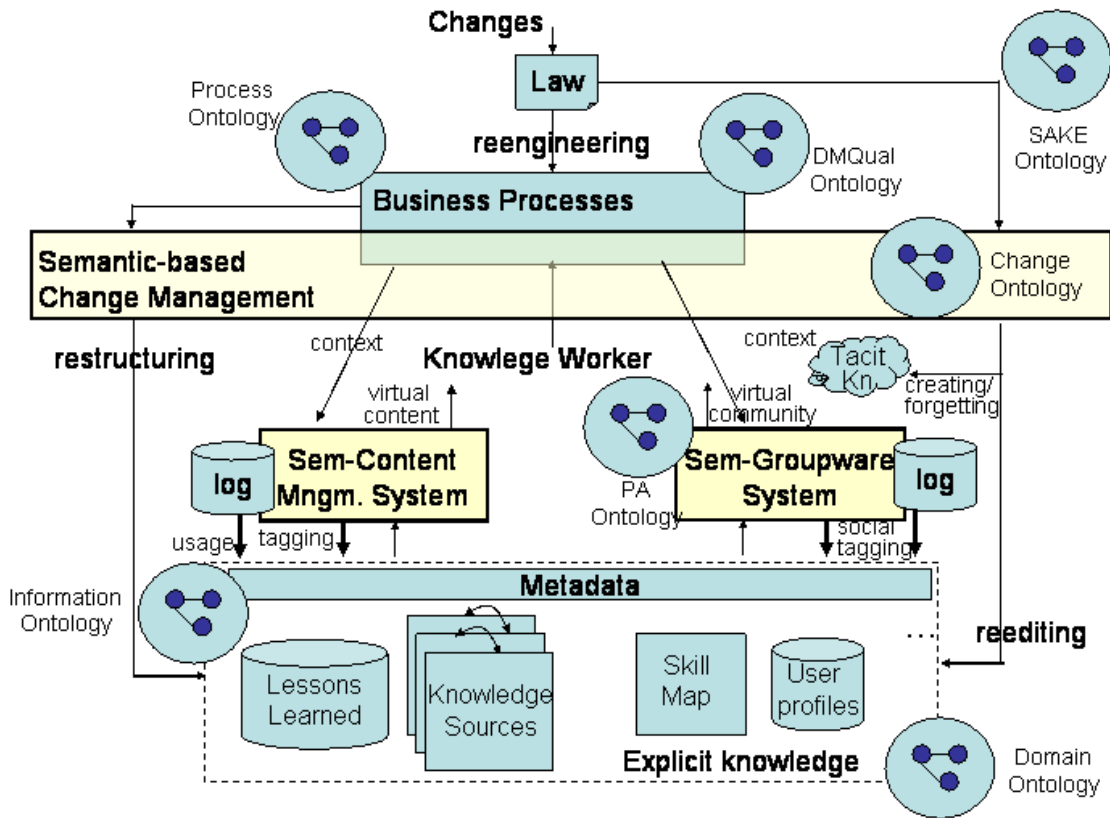
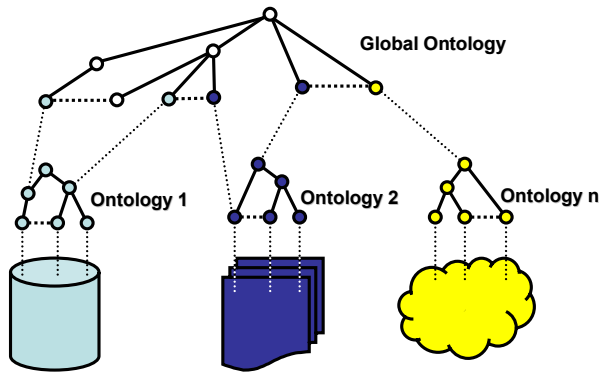


Figure 3: The architecture of the prototype system for agile e-government

Figure 2 depicts the vision of agile knowledge-based e-government. The agility means that the system can respond to a large amount of heterogeneous changes efficiently (i.e. fast and correctly). The backbone of the approach is the changed management infrastructure that ensures consistent change propagation to the effected knowledge sources.

The main challenging issue is how to determine all targets of a change, since knowledge sources are physically distributed, structurally heterogeneous and semantically interconnected. It is clear that moving the focus from documents to their conceptual description can help in neglecting above mentioned diversities. As we already mentioned, semantic technologies are promising technologies for this harmonization.

Therefore, the content of each knowledge resource will be conceptually represented using a common ontology, so that information between structurally diverse resources can be integrated on the semantic level. Figure 4 illustrates the basic idea of ontology-based knowledge integration.



KnowledgeSource 1 Knowledge Source 2...Knowledge Source n

Figure 4: Ontology-based knowledge integration

The content of knowledge resources is annotated with the set of metadata in an annotation (indexing) process. The metadata are represented as formal statements in the selected logical language for representing a concrete ontology. For example, on the WWW this language is OWL (<http://www.w3.org/2004/OWL/>). Figure 5 illustrates the role of ontologies in conceptualization of the knowledge in order to enable its more efficient management.

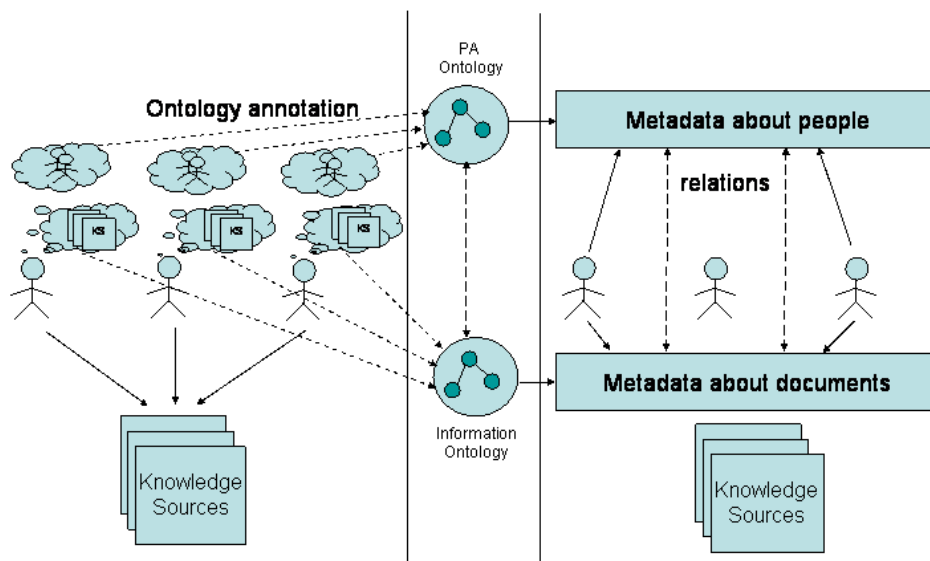


Figure 5: The role of ontologies in the annotation process

Example Scenarios

In the following we present two example scenarios in which a public administration (PA) employee may benefit from an ontology-based Content Management System (CMS) and an ontology-based GroupWare System (GWS).

Resolving a difficult case: Assume that a PA employee is working on a case and needs a specific document related to that case. She enters a query string related to that case in the respective search textbox in the CMS. However, due to its semantic nature, the CMS identifies automatically the context of the case the PA employee is working on at that point in time. Let us assume that part of that context is that the person, to whom the case relates to, is 65 years old. Thus, the initial query is extended with this new information. The CMS searches through ontology-based metadata and returns documents which are semantically very relevant for the case and consequently very useful for its resolution. An important benefit of that approach, especially in the case of large information repositories, is that this context information introduces more constraints resulting in narrowing down the search space.

Finding an expert: Assume a PA employee is searching for an expert who can help her resolve the specific case at hand. The PA employee enters a query string related to that case in the respective search textbox in the GWS. The system tries to extend the query with some context information automatically. The underlying ontologies model the relationship of PA employees with past cases they have worked on. Thus, the GWS is actually searching through the respective metadata and offers the facility to establish a communication with the expert person for the given case (for instance by inviting the expert to register as a member in a shared workspace where the two PA employees can exchange files and communicate in a forum/thread-like way).

5. Semantic Technologies for Adaptive e-Government Services

Need for Adaptive Service Provision

Although an e-government system has a complex structure, users interact only with a front office, which is usually realized as a web site (portal) sometimes combined with an email for delivery purposes. The web portal is a channel to publish administrative services on-line, spreading from only providing information about a service to completely treating a public service via the web site, including decision and delivery (Cap Gamini Ernst & Young, 2003). Therefore, the structure and the design of a front office have a crucial importance for the success of e-government.

Currently, the technological possibilities rather than user needs have determined the development of front offices, so that a large percentage of potential users of e-government still prefer to access government services through traditional channels (mostly face-to-face) (Gareis, 2004). The main problem is that users, especially those without web experience, are often lost in the information space of a portal and need some specific helps or hints that are normally provided in a brick-and-mortar environment, like getting help in finding the office responsible for a service, or in filling up a formulary.

Indeed, the most crucial characteristic of a front office is to be inclusive, i.e. to enable the accessibility of each service to each user. On the other hand, in order to increase the pay-off of using an e-government system, the delivery of services has to be very efficient, which means, for example, that an (experienced) user can perform a service without being bothered with irrelevant information. Therefore, this potential conflict between the simplification of e-government services to ensure inclusion, with potentially less efficiency gains, and the skills required to enable active user participation, leads to a need for a customized delivery of services. Such a delivery will bridge the digital divide by ensuring inclusiveness across a diversity of needs, which is one of emerging trends in public needs for e-government services (European Commission, 2004).

Moreover, despite the hypermedia-based infrastructure of the web, the state of the art in the development of front offices is publishing a service in isolation, without considering all contexts in which it can be used and expressing the cross-dependencies between services. For example, in the current front offices there is usually one static grouping of services, although there are many possible ways to structure them depending on the current user's need (i.e. working context). This fact can be used as an explanation of why finding the most suitable service for a particular need is one of the most reported usability problems in e-government (EU Report, 2004).

Finally, measurement of the users' satisfaction with e-government (EU Report, 2004) shows that due to the increased users' expectations, the level of users' satisfaction do not seem to increase anymore at some point. This means that the quality of public services is a more complex issue and depends on the possibility to anticipate changes in users' needs. In order to support the continual improvement of the quality of public services, the focus of a front office should be shifted from an infrastructure for delivering a service to an intelligent platform for discovering needs for service improvement that will meet users' expectations. In that way an e-government system becomes more proactive offering more and more qualitative services to its customer. Therefore, the delivery of public services in a front office should

be tailored to the preferences, needs and expectations of each user individually. Moreover, in that way e-government can reach to a large extent the intimacy/adaptability a user is used to get in a real administrative office, where the public administrator understands the user's specific situations and can act reasonably. Together with the advantages of online transactions — no waiting queues, no restriction in office hours, no driving time — adaptability will help that the acceptance of e-government exceeds that of real administrative offices.

There are two challenges in realizing an adaptive front office. First, experience shows that web users tend to be reluctant to provide the feedback about their satisfaction/expectations via filling questionnaires or forms. In order to avoid asking users explicitly, means for capturing their preferences implicitly are required. Second, many of the current generation of public services are off-line services converted for on-line use without further development and optimization of the services. This means that the description of public services must be extended with the information about users' preferences in order to enable their customized delivery. This makes the customization process more difficult since the changes in the back office are required as well.

Research towards Adaptive e-Government Services

In the following paragraphs we report on current research on developing adaptive e-government services using semantic technologies; see also Stojanovic, Stojanovic, Hinkelmann, Mentzas and Abecker (2006). Figure 6 illustrates the aforementioned problems in the existing e-government systems and how our research effort attempts to address them. More specifically, we intend to provide:

- a personalized front office (instead of a uniform one) that will enable personalized and “inclusive for all” access, regarding users' preferences, needs and expectations;
- a quality-driven bidirectional platform (instead of one way service delivery) that will enable context-aware delivery of services and implicit capturing of users' feedbacks about the usability of the front office;
- a customized back office (instead of an inflexible one) that will ensure multi-context views on public services based on the user and quality model;
- a framework to support knowledge sharing between front offices, i.e. how to use best practices learned in one front office in other offices.

Since our goal is to create self-adaptive e-government services, we aim to adapt efforts related to the autonomic computing initiative. Our research prototype will be realized according to the ontology-based MAPE (Monitor Analyse Plan Execute) model (Stojanovic et al, 2004), which uses ontologies as the backbone of the adaptation process. The approach abstracts the management architecture into four common functions: collect data, analyse data, create a plan of action, and execute the plan.

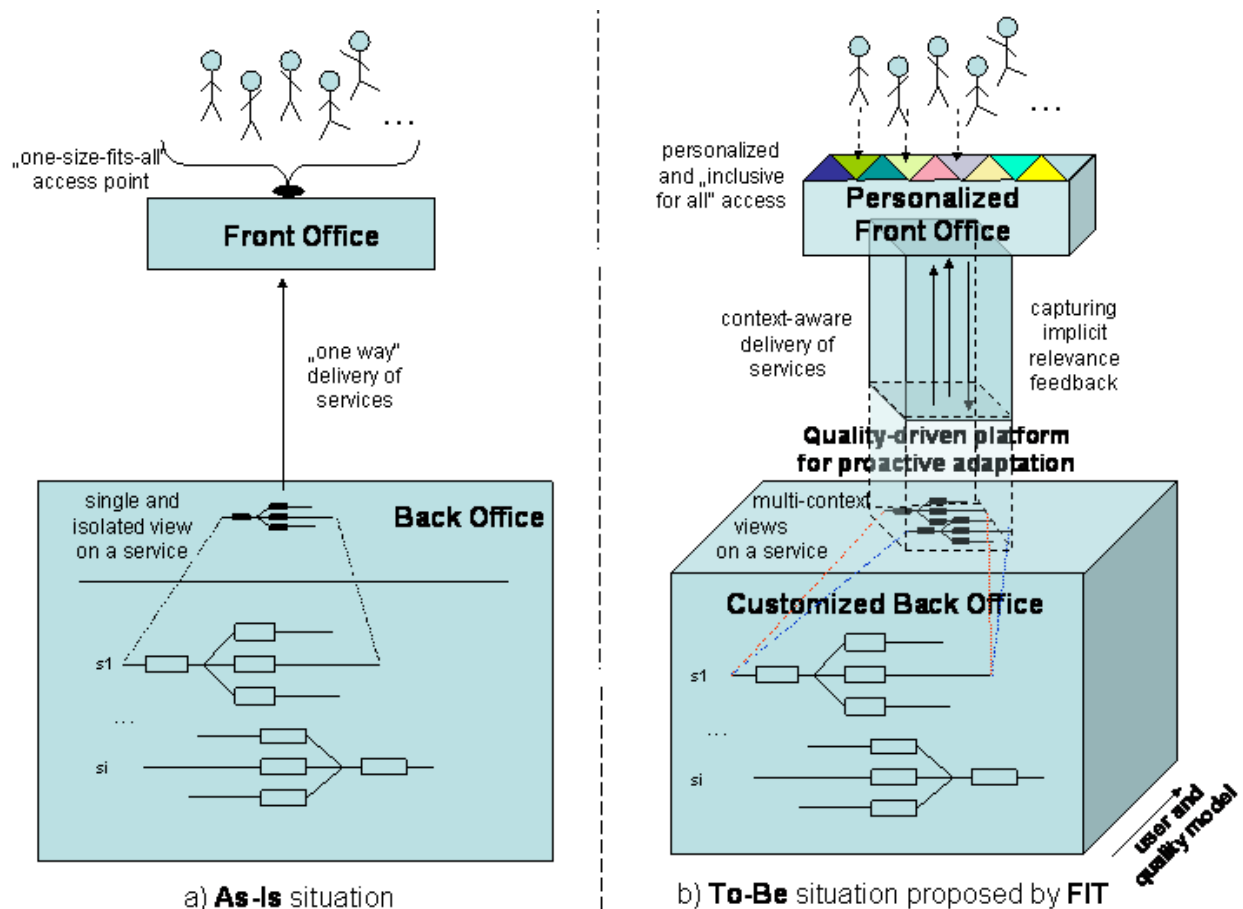


Figure 6. As-Is versus To-Be situation for adaptive e-government service provision

Indeed, the conceptual framework decomposes the control loop into four parts:

- Monitor – mechanism that collects, organizes and filters the data about users’ interactions with the e-government portal;
- Analyse – mechanism that aggregates and transforms the collected data, correlates this data with background knowledge (e.g. domain knowledge, quality model, user model, administrative processes) and makes proposals for improvement;
- Plan – mechanism to structure actions needed to realize requests for improvement by modifying the underlying administrative process description. The planning mechanism uses “learned” business rules to guide the work;
- Execute – mechanism to update the portal according to the changes applied in the business process descriptions and the needs of users.

By monitoring (M) the behaviour of users and analysing (A) this data, planning (P) which actions should be taken and executing (E) them, a kind of a “usage loop” is created.

Example Scenario

Figure 7 depicts this “usage loop”. A user is searching for an on-line service by querying and/or navigating through an e-government portal (cf. 1 in Figure 7). All activities that the citizen performs are logged in the Semantic Log (cf. 2), which is structured according to the Log Ontology, and contains meta-information about the content of visited pages whose meaning is represented in the Domain ontology. This log data is analysed in the Knowledge Discovery module (cf. 3) that detects anomalies in the design of a portal and/or on-line services, whose repairing improves the usability of this portal. The context information (described through Quality ontology, User ontology, Administrative processes ontology) is

used to improve the learning. This discovered knowledge is incorporated in the existing administrative processes, through business rules (cf. 4) in order to be interpreted by a workflow engine. Finally, since the underlying portal provides a view on on-line administrative processes, all changes made in the processes are reflected on the portal (cf. 1), by tailoring the portal to the users' needs, which implicitly arose. The repetition of this cycle leads to the continual improvement of an e-government system.

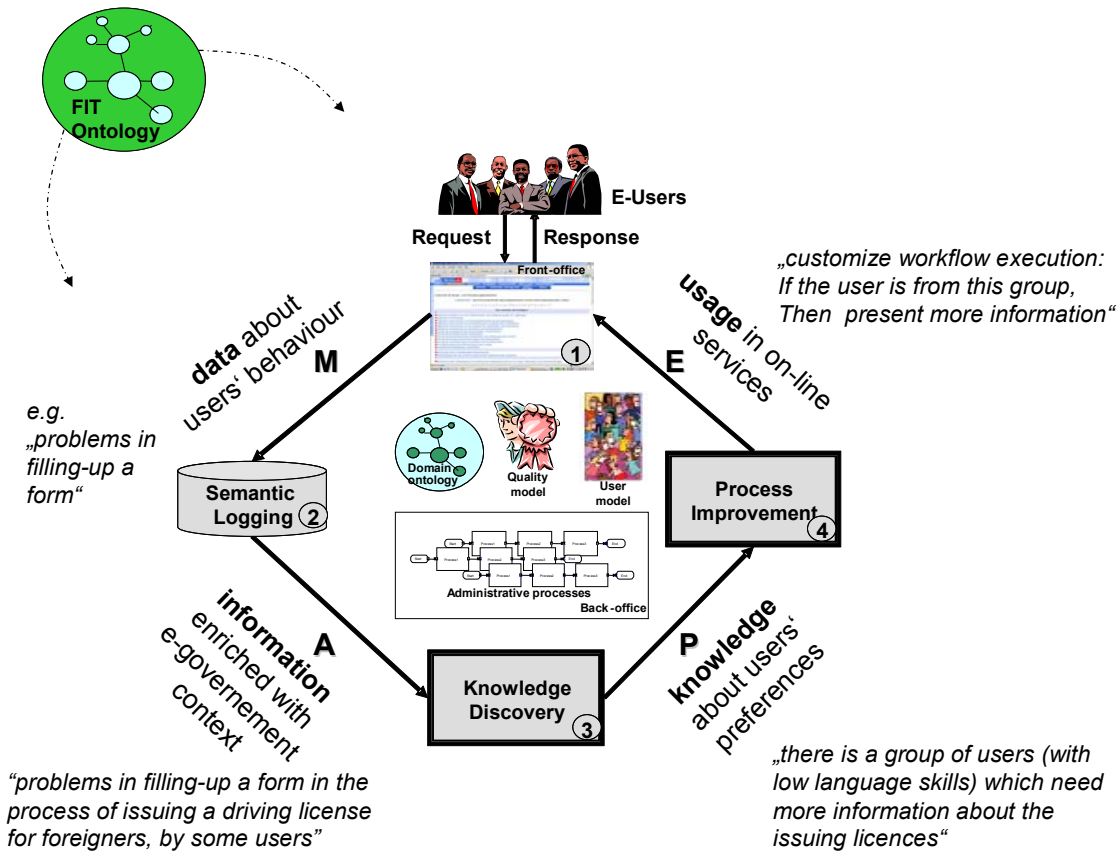


Figure 7: Closing the semantic loop in using an e-government system

For example, if many citizens spent a lot of time on filling in a form of a service or they cannot finish the corresponding activity, then the Knowledge Discovery module will learn preference rules for such groups of users (e.g. which additional content should be shown in order to make the process more efficient). For a new user, the system will discover, by analyzing the clicks the user made in the current web session, which group of e-citizens he/she could belong to. Consequently, the execution of e-services will be customized according to already learned preference rules and the user will be able to finish a task efficiently. Similarly, more advanced users will profit from the customization by not being "bored" with information, which is useless for them. In that way, we aim to develop a user-friendly platform that integrates the results from the analysis of the usage data with the tools that guide the process of modifying the portal.

In order to enable formal specification and analysis of the adaptation process all factors that influence the adaptation as well as the relationships between them should be defined formally and explicitly. This formal model will be captured in the ontology. This ontology will model the conceptual dependencies between users, administrative processes (including business rules), quality and portal; since the user satisfaction heavily depends on how well all these factors and their relationships are taken into account.

The explicit representation of the semantics of all relevant data through the ontology will enable e-government to provide a qualitatively new level of functionalities, such as verification, justification, gap analysis, etc. For example, gap analysis will enable the discovery of problems (deficiency) in the e-government portal in case that no service is found for a given user's request. Moreover, the ontology will enable the machine readability and, more important, understandability of the knowledge about the users' preferences, which is learned in the mining process (cf. Knowledge Discovery in Figure 7). In that way formal methods can be applied for the inspection of the reliability of this knowledge, or for the transfer to other front offices. Therefore, the ontology will play a role of an e-government upper ontology, by ensuring that there is "one model in one place" and that the e-government is "decentralized but connectable". Finally, the ontology will be combined with information about the "usage" of some entities from the e-government domain, which will support the discovery of frequently used resources as well as the problematic situations. This will lead to the development of proactive e-government that uses predictive methods to redirect the system towards better results and/or to eliminate problems.

6. Conclusions

In this paper we have outlined the benefits that semantic technologies may bring to a knowledge-enhanced e-government platform. Specifically we have outlined the synergies between the semantic web and e-government and briefly sketched two research efforts towards the use of semantic technologies for supporting agility within the back-office processes of public administrations and towards facilitating the development of self-adaptive front-office processes.

These two efforts are currently underway for which there are developed research prototypes which are in the process of being tested in pilot cases in public organizations in European countries with varying needs (from the ministry to the municipality level). Specifically agile knowledge-based e-government is being tested in Poland (Urząd Miasta Czestochowa – the City Hall of Czestochowa), in Slovakia (City ward Kosice) and Hungary (Ministry of Informatics and Communication), while research on providing adaptive e-government services is pilot-tested in Greece (Ministry of Interior, General Secretariat of Public Administration and e-Government), Austria (City of Voecklabruck) and Serbia (Ministry of Science And Environmental Protection).

Future work includes the qualitative and quantitative evaluation of the research prototypes and the actual benefits they bring to the users. This evaluation will include: a) the determination of the scope and purpose of the measurement within end-users environments; b) the selection of suitable measures, metrics and indexes; c) the collection of data; and d) the analysis of results and examination of impacts within the public organizations.

We firmly believe that semantic technologies have the potential to solve many of the interoperability and search problems in e-government and hence pave the way towards knowledge-enhanced government institutions. Nevertheless, the road ahead from research prototypes to fully implemented and exploitable systems is still long as many obstacles that go beyond technological infrastructures (such as strategic, cultural, organizational, etc) have to be concretely addressed; see e.g. Mentzas (2003 and 2004).

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iii. Leadership and Management Issues

BUILDING TRUST THROUGH E-GOVERNMENT: LEADERSHIP AND MANAGERIAL ISSUES

Professor Bhatnagar Subhash

Abstract

Erosion of citizen's trust in Government due to rampant corruption at various levels in the Government ought to be an area of serious concern for developing countries and development agencies. A well-planned e-government strategy can build a more efficient, accountable and transparent government. If planned in consultation with representation from key stakeholders, e-government applications can rebuild citizen trust in government, by improving service delivery, reducing corruption and empowering citizens to participate in advancing good governance. The paper discusses few examples of eGovernment where corruption was significantly reduced and draws lessons on leadership and managerial issues in deploying ICTs to combat corruption.

1. What is Public Trust?

According to an OECD report public service is a public trust¹. Citizens expect public servants to serve the public interest with fairness and to manage public resources properly on a daily basis. Fair and reliable public services inspire public trust and create a favorable environment for businesses, thus contributing to well-functioning markets and economic growth.

The OECD report identifies a number of core public service values as being important for building citizen trust. These include: impartiality; legality; integrity; transparency; efficiency; equality; responsibility and justice. Many of these core values have been compromised with the spread of corruption in its various manifestations in many developing countries. UNDP defines corruption as the misuse of public power, office or authority for private benefit – through bribery, extortion, influence peddling, nepotism, fraud, speed money or embezzlement². Corruption is principally a governance issue – a failure of institutions and a lack of capacity to manage society by means of a framework of social, judicial, political and economic checks and balances. In the wake of globalization and increased pressures for improving “governing institutions,” there is a global demand for accountable and transparent governance.

2. Strategies to Reduce Corruption

Two major factors that contribute to the growth of corruption are the low probability of discovery, and perceived immunity against prosecution. Secrecy in government, restrictions on access to information by citizens and the media, ill-defined / complex and excessive rules, procedures and regulations can all lead to a low chance of discovery. A lack of transparency in the functioning of government agencies can make it easy for the perpetrators to cover their tracks thus making unearthing of corruption very difficult. The weak character of institutions which are supposed to investigate charges of corruption and prosecute the guilty, as well as an inefficient or corrupt judiciary further exacerbate the problem of corruption and facilitate immunity of perpetrators against prosecution. Strategies to reduce corruption must therefore target multifaceted reforms in the legal system, judicial processes and functioning of agencies delivering services. The extent of corruption needs to be measured and media needs to sensitize the society to the long term detrimental effects of corruption.

¹ OECD (2000). Building Public Trust: Ethics Measures in OECD Countries. Retrieved from <http://www.oecd.org/dataoecd/60/43/1899427.pdf>

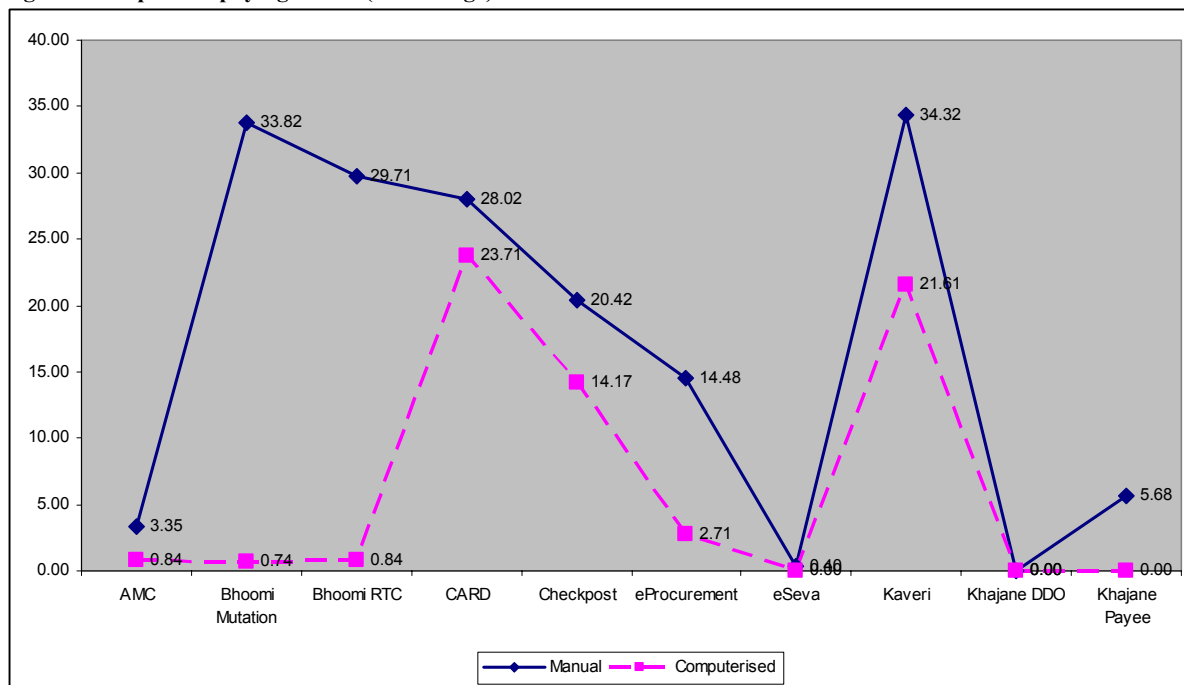
² UNDP (2004). Anti-Corruption Practice Note. Retrieved from <http://www.undp.org/policy/docs/practicenotes/Anti%20Corruption%20Note%20Draft%20FINAL%20copy%20edited%20100404.pdf>

3. Can eGovernment help in Combating Corruption?

For some years there has been anecdotal evidence of impact on corruption from a large number of eGovernment case studies from developing countries. However, recent studies³ that assessed the impact of eight wide scope and scale projects from India and two in Chile provided more concrete evidence (see Figure 1 below for an assessment of Indian projects).

Corruption existed in six out of the eight projects before the service delivery was computerized. After computerization two projects were able to reduce corruption to a very significant extent and in 4 others there was a marginal reduction. The study used a systematic survey of 250 randomly selected clients (users) who had used both the manual and computerized systems in each project, seeking data on whether bribes were paid to get the service, amount of bribes paid, perception of corruption within the service delivery agency and perception on quality of governance in addition to several other attributes of a service delivery system. Two projects studied in Chile⁴ also showed that corruption was reduced. However, the fact that impact on corruption varies across projects suggests that the factors that contribute to success and failure in tackling corruption need to be studied further.

Figure 1. Proportion paying bribes (Percentage)



There have been two general approaches used to integrate e-government in anti-corruption initiatives. First, e-government can become one of the key components of a broader anti-corruption strategy as is demonstrated by the OPEN system installed in the Seoul Municipality in the Republic of Korea⁵. Second, service delivery improvement initiatives can be implemented in corrupt departments, specifically targeting transparency and reduced corruption as objectives. An example is the Bhoomi project in India. Both of these cases are discussed in detail.

³ Study titled 'Impact Assessment Study of E-government Projects in India' submitted to the Department of Information Technology, Government of India; and 'Impact Assessment Study of Computerized Service Delivery Projects from India and Chile' submitted to the World Bank, Washington. A presentation on the findings from the eight Indian projects is available at <http://www.mit.gov.in/cbw/findings-from-eight.pdf>

⁴ ChileCompra and Tax Online in Chile showed reduced corruption.

⁵ The URL of the document on OPEN which mentions results of a survey is: http://english.seoul.go.kr/gover/initiatives/down/OPEN_System.pdf

4. Integrating E-government in Anti-corruption Initiatives

Efforts to prevent corruption can be complemented with e-government strategies that review and clarify procedures and practices, and design systems that simplify, standardize and de-personalize the delivery of services. Of course this needs to be complemented with civil service reform, as well as, societal education efforts in reducing tolerance to corruption and reinforcing fundamental values such as honesty.

E-government can also help monitor corruption and hence better enforce laws and policies that ensure accountability and transparency by standardizing data collection methods, tracking actions and decisions and developing a feedback/complaint mechanism. This needs to be complemented with the development of institutions, laws and practices that protect “whistleblowers,” imposing of powerful disincentives for corruption and punishment for those involved in corruption. A major part of the OPEN Initiative was focused on the simplification of regulations and procedures, reengineering of work practices, transparency in procedures, effective communication with the citizens, and training, rather than the technology. Technology was used as a tool to achieve its goal.

Two factors, in particular contributed to the success in implementation. First, there was strong leadership provided by the mayor and second, widespread citizen participation. There is an implicit hierarchy of objectives that e-government applications must consider in an anti-corruption programme. Increasing access to information; presenting the information in a manner that leads to transparency of rules and their applications in specific decisions; and increasing accountability by building the ability to trace decisions / actions to individual government officials, represent the successive stages in the hierarchy. All these objectives in tandem can curb corruption significantly, and ignoring some of them can defeat the whole purpose. Media, as an alert watchdog, plays a significant role in providing information and generating widespread debate around significant issues of public concern. There is no specific sequence in which different kinds of reforms are introduced. Often they run a parallel course, depending on the state of the starting condition.

OPEN Initiative, Republic of Korea

In 1998, Seoul’s Mayor initiated an anti-corruption programme, the Online Procedures Enhancement for Civil Applications (OPEN) Initiative, which opened up governmental procedures to the public. This project is widely recognized as an effective example of political and managerial commitment to transparency and for its impact on corruption.

A review team analysed the entire set of civil applications for permits and approvals, and identified 26 categories of civil applications that most frequently caused irregularities and inconvenience to citizens. A development team prioritized the details to be made public on a web portal. For each of the 26 categories, the OPEN website contains information on application procedures and contact information of departmental persons-in-charge so that citizens can monitor applications and raise questions in the event any irregularities are detected. Examples of civil applications include: building permits and inspection; approval and sanction of entertainment establishments and song bars; and decisions and change of urban development plans.

A total of 5,000 employees in 485 city departments dealing with applications were trained to operate the system and add and change the data. Following training, usernames and passwords were assigned to allow each individual trainee to make entries at his or her department.

Results from surveys by the Audit and Inspection Division of the city government and Transparency International showed very positive results in combating corruption. In a 2005 survey, 69% were satisfied with the system and 64% thought that the system helped to preserve transparency in administration. The number of visitors to OPEN is about 1.3 million. The number of improprieties in 8 key departments came down by 54 - 83% in one year.

5. E-delivery of Service Targeting Corruption Prone Departments

In the state of Karnataka in India, one of the first eGovernment applications to be implemented was Bhoomi for the computerization of land records⁶. Department dealing with land records are known to be corrupt and mismanaged in the entire sub continent of South Asia. The project achieved success because it made the data transparent. Any one can get a copy of any land record. Processes were reengineered to take away unnecessary discretion from civil servants to delay or deny the service. Now all applications are accepted at a computerized kiosk and date stamped. The applications must be processed in a FIFO order, taking away the power to expedite any transaction.

Thanks to a central Government grant, the revenue department could create an adequate infrastructure to support the Bhoomi initiative. An investment of Rs 216.35 million was used to equip 206 centers with hardware / software and connect such centers to a state wide area network. A central data center was built to which all the data on land records is uploaded. Eight hundred kiosks set up by a private partner can print the RTCs in rural areas by accessing the central data base over the Internet.

Resources were committed to build organizational and individual capacity by training all employees from senior officials to clerical staff. To allay the fears of field officials, twelve state-level information seminars were organized for 1,200 senior and mid-level officers. Additionally, four division-level workshops were organized to train 800 officials. These seminars emphasized that maintenance of land records was only one of their many functions and that computerization would remove the drudgery of maintaining these records manually. Reducing corruption was not a key message at these gatherings although it was one of the explicit objectives in conceptualizing the project. Using e-government to fight corruption is often incidental and not part of the design objectives in most projects.

The political executive was completely involved in the computerization project. The state chief minister and revenue minister highlighted the importance of the project publicly. The chief minister wrote regularly to all district deputy commissioners, exhorting them to get fully involved in the computerization. He inaugurated a large number of land record kiosks. Meanwhile, the revenue minister regularly reviewed the computerization process and also inaugurated a large number of kiosks. A committee of Members of the Legislative Assembly

The Bhoomi Project, India

The Bhoomi project which was able to eliminate corruption is analysed. The *Bhoomi* (meaning “land”) project developed an online system that delivers land records to the farmers in Karnataka, India. Prior to the Bhoomi project, an estimated 9,000 village accountants (each serving 3-4 villages) maintained the land records in Karnataka. These records were not open to the public and farmers had to bribe the accountants to obtain a copy of the Record of Rights, Tenancy and Crops (RTC), a record that is mandatory for various purposes such as bank loan application.

The Bhoomi Project computerized 20 million land records by capturing legacy data records maintained by the village accountants. A copy of the RTC can now be obtained by anyone after providing the name of the owner or plot number and a fee of INR 5.00 (USD 0.33) at computerized kiosks in the 206 sub-district offices. The clients can also see the transaction online through a second computer screen facing them. Nearly 800 rural kiosks can also issue a copy of the RTC.

When a change of ownership takes place through sale or inheritance, farmers can file an application at the kiosk. The requests can only be processed on a first-come-first-serve basis. Each request is assigned a number that can be used by the client to track the status of the application on a touch-screen in some kiosks or by asking the kiosk operators. The Revenue Inspector will approve the request within the prescribed period (30 days from the notice date) if the request is valid. Following verification, a notice is automatically generated by the computer system to the affected parties and the system updates the particular land record. Operators of the computerized system are made accountable for their decisions and actions through a login system. The number of RTC transactions nearly doubled from 6.56 million to 12 million per year in last 4 years. The number of mutations grew from 0.29 million in 2003 to 1.03 million in 2005. Growth in transactions indicates increasing trust in the system.

⁶ Bhatnagar, Subhash and Chawla, Rajeev (2007), Online delivery of land titles to rural farmers in Karnataka. In Deepa Narayan and Elena Glinskaya (Eds.), *Ending Poverty in South Asia: Ideas that Work*, pp 219-243. World Bank. Also see Bhoomi Project Website: <http://www.revdept-01.kar.nic.in/>

(MLAs) visited the kiosks and deputy commissioners invited MLAs of their districts to witness the functioning of kiosks. All this helped demonstrate that there was a strong political will for computerization.

6. The Way Ahead

The examples mentioned above lend credence to the belief that technology can transform government's often-negative image. In many countries, citizens view their governments as bloated, wasteful, and unresponsive to their most pressing needs. Mistrust of government is rife among the public and businesses. Civil servants are often seen as profiteers. Although, e-government should not be seen as a panacea for the complex and well-entrenched problems of corruption, e-government is one of the many tools whose potential in tackling these problems needs to be recognized by decision makers. Unfortunately, reducing corruption has not been a part of many reform programs and e-government initiatives. The following suggestions can go a long way in creating the enabling environment that will foster many more anti-corruption initiatives.

Build political commitment: Mere existence of anti-corruption and e-government strategies does not guarantee that corruption will be curbed. Commitment of political elites (including adequate financial resources) is of key importance to the success of all government anti-corruption programmes, including those with an ICT component. Backed by political leadership, project leaders can reengineer processes that take away arbitrary power from civil servants and political commitment could lessen the traditional resistance to change. The cross-cutting and multi-stakeholder nature of e-government initiatives makes it more important that there is strong leadership and political commitment among different government ministries and agencies. Political commitment needs to be demonstrated through specific actions.

Provide legal support: E-government can lead to transparency provided that the legal framework supports free access to information. Until a few years ago most countries still had strict national secrecy laws. These were repealed in favour of Freedom of Information Laws in the U.S. and much of Europe, but only after decades of lawsuits. Secrecy laws are still in effect in much of the developing world. India did well to enact a Freedom of Information Act in 2005 which is already bearing fruits. Whereas in most developing countries criminal laws penalize specific forms of corruption, laws must also punish attempted corruption and the breach of core values enunciated earlier. Clear and known procedures that facilitate the reporting of wrongdoing and provide protection for "whistleblowers" can assist with the detection of individual cases of misconduct.

Promote access and use: Increasing availability of information on the Internet is not sufficient. Providing universal access, promoting literacy, fostering people's participation in governance are some of the key challenges of any e-government applications. Media, as an alert watchdog, plays a significant role in providing information and generating widespread debate around significant issues of public concern.

Show evidence: Much of the evidence linking e-government with reduction in corruption is anecdotal. Only in a couple of cases has the impact on corruption of e-government applications been audited independently. Systematic surveys of citizens and other stakeholders can help establish the linkage more clearly and will also provide invaluable feedback on the parts of the system that need improvements.

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LEADERSHIP AND CROSS-BOUNDARY INFORMATION SHARING INSIGHTS FROM THE US WEST NILE VIRUS OUTBREAK

Dr. Theresa A. Pardo

Abstract

Information is one of the most valuable resources of government. Government managers, however, are finding the information needed to plan, make decisions, and act is often held outside their own organizations, collected for widely different purposes and maintained in disparate formats. As a consequence, governments around the world are increasingly turning to information sharing as a strategy for maximizing the value of information in providing services and responding to problems. New practices are emerging at all levels; from town governments creating performance-based management capability by sharing information between departments such as police and highway, to state- and provincial level efforts to coordinate public safety, to national and cross-national efforts to respond to public health crises. Information sharing allows government managers to work at the same time, with the same information integrated from multiple disparate sources. It has the potential to support the transformation of organizational structures and communication channels among multiple agencies working in different locations. These integration processes often involve new work processes and significant organizational change. They are also embedded in larger political and institutional environments that shape their goals and circumscribe their choices. This paper draws on the research program underway at the Center for Technology in Government at the University at Albany in New York State (www.ctg.albany.edu) to present guidance on information sharing as a strategy for building the capability of government to adapt to the new knowledge intensive economy. One study in particular from this program¹ is highlighted². This study explored mechanisms through which executive involvement, formal authority, and informal leadership affect multi-sector collaborative information sharing, thereby extending what is known about leadership in complex, multi-sectoral network environments such as a public health crisis.

1. Introduction

Information is one of the most valuable resources of government. Government managers, however, are finding that the information needed to plan, make decisions, and act is often held outside their own organizations, collected for widely different purposes and maintained in disparate formats. As a consequence, governments around the world are increasingly turning to information sharing as a strategy for maximizing the value of information in providing services and responding to problems. New practices are emerging at all levels; from town governments creating performance-based management capability by sharing information between departments such as police and highway, to state- and provincial-level efforts to coordinate public safety, to national and cross-national efforts to respond to public health crises. Information sharing allows government managers to work at the same time, with the same information integrated from multiple disparate sources. It has the potential to support the transformation of organizational structures and communication channels among multiple agencies working in different locations. These integration processes often involve new work processes and significant organizational change. They are also embedded in larger political and institutional environments that shape their goals and circumscribe their choices.

Understanding the factors influencing information sharing and collaboration in solving pressing public problems is a focus of attention for digital government practitioners and researchers alike. Researchers at the Center for Technology in Government at the University at Albany, State University of New York

¹ This program is funded in part by the National Science Foundation Information Technology Research Program, Grant # ITR-0205152, 2002-2004.

² Gil-Garcia, J. R., T.A. Pardo & G.B. Burke, *Government Leadership in Multi-Sector IT-Enabled Networks: Lessons from the Response to the West Nile Virus Outbreak*, Leading the Future of the Public Sector: The Third Transatlantic Dialogue, University of Delaware, Newark, Delaware, USA, (2007).

(www.ctg.albany.edu) are exploring many of these factors and providing both new guidance for practitioners and new models of understanding for academics. For example, trust building has been identified as an important social process for developing cross-boundary information sharing among organizations and individuals. Given the critical role trust plays in fostering collaboration and allowing the development of enterprise wide integrated information resources, practitioners planning new cross-boundary information sharing initiatives must explicitly include resources for trust building among information sharing partners.³ Leadership characteristics and authority strategies are also significant in sustaining collaborative efforts across organizational boundaries. New guidance built on this research provides practical advice to leaders on how to create information sharing capability in government.

In late summer and early fall of 1999 the United States experienced the first outbreak of West Nile virus (WNV) in the Western hemisphere. The first cases appeared in the New York City area. In 2002, as the outbreaks continued to move westward, the State of Colorado experienced its first case. As New York and Colorado worked to build response capacity, they turned to information sharing and inter-organizational collaboration as lead strategies. In both states the response required many new relationships to facilitate the sharing of required information; animal and human public health professionals unaccustomed to collaborating across traditional government boundaries came together with a mix of other public and private sector organizations representing both human and animal healthcare facilities and providers.

Creating information sharing capability in government

Solving the Integration Puzzle, *Public CIO Magazine*

The article brought together diverse insights from case study participants from the fields of criminal justice and public health and highlighted their interorganizational information integration challenges and success stories.

<http://www.public-cio.com/story.php?id=2005.04.28-93830>

Sharing Justice Information: A Capability Assessment Toolkit

Government faces many challenges that can be addressed more successfully when information is shared across organizational boundaries. This toolkit provides a process for assessing where capability for information sharing exists and where it must be developed in order to achieve public safety goals. Assessment results provide a basis for action planning to fill capability gaps both within and across organizations.

http://www.ctg.albany.edu/publications/guides/sharing_justice_info

Recent research highlights the level of changes required to create the kind of high-functioning, cross-boundary capability necessary in these response efforts as among the most complex, deep functional and institutional changes (Fountain, 2001; Cook, 2004). Previous studies have identified the challenges to efforts to create this capability as ranging from data and technical incompatibility to the lack of institutional incentives to collaborate and the power struggles around multi-organizational settings (Gil-Garcia & Pardo, 2005). Some of the challenges faced by response agencies were new. In particular, government leaders faced new challenges resulting from the nature of the threat and the complex requirements of an interorganizational response. They needed to find ways to facilitate and foster interorganizational collaboration and information sharing across organizations from multiple sectors and all three levels of government.

Although there were important differences, the responses in New York and Colorado shared several characteristics such as their dependence on information technology and multi-sector organizational networks. The organizations involved included federal and state agencies, local governments, and a mix of public and private human and animal healthcare facilities and providers to include hospitals, university labs, and veterinarian practices. The comparative analysis of these two cases focuses on the role of government executives, formal authority, and informal leadership in the networked response to the West Nile virus outbreak. The study attempts to disentangle how these leadership factors affected the collaboration efforts and the necessary information sharing during the responses. Therefore, it provides not only evidence of the importance of each of these variables, but also uncovers some of the mechanisms through which they have an impact on interorganizational information sharing. Further, it contributes to

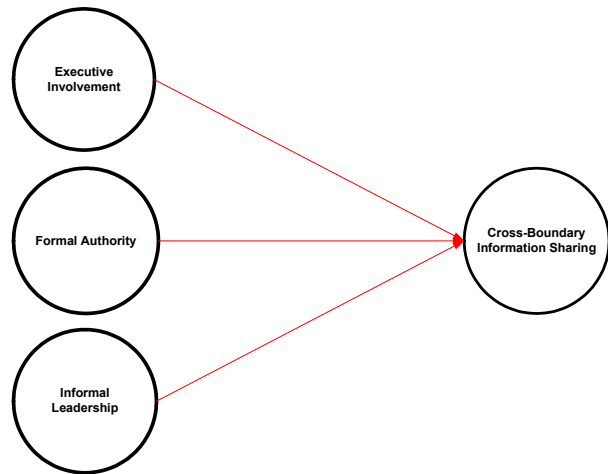
³ See Pardo, T.A., et. al. 2006.

current knowledge by describing some of the mechanisms through which executive involvement, formal authority, and informal leadership influence cross-boundary collaboration and information sharing. The study also provides practical guidance on leveraging executive involvement, formal authority, and informal leadership in highly complex networks enabled by information and communication technologies.

2. Leadership, Information Technologies, and Cross-Boundary Collaboration

Governments around the world are increasingly turning to information sharing as a lead strategy for developing response capacity for problems in a wide range of programs and policy areas. As information sharing is pursued the complexity of this strategy is becoming clear. Developing cross-boundary information sharing to support government response capacities requires change, in some cases, significant changes in organizational and technological processes. The delivery and management of public services increasingly relies on complex networks of interdependent organizations (O’Toole, 1997). Crosby and Bryson (2005, p.8) describe this setting as “no-one-in-charge, shared-power world”, where a great number of organizations and groups have only partial responsibility to act on a public problem and share the power that is required to solve it. As a result, the need has been raised for a new type of leadership that crosses boundaries of departments, levels of government, and sectors. As Huxham and Vangen (2000) point out, two fundamental assumptions of traditional leadership literature do not apply to collaborative settings. First, a leader cannot exert formal authority based on hierarchical rank because the individuals involved are from different organizations. Second, it is very difficult to agree upon a common goal because participating organizations have different and often conflicting goals.

Interorganizational, cross-boundary leadership has started to become an essential element of information systems management. In today’s organizations the wall between traditional information technology (IT) departments and functional business units have been dismantled, and interorganizational networks and external alliances have become more common (Tapscott & Carston, 1993). Since IT permeates all business functions of an organization, IS leadership requires a holistic cross-functional view of the organization, which poses unique challenges for many chief information officers (CIOs) (Karahanna & Watson, 2006). Recent literature highlights the importance of leadership as an influence of IT initiatives in general and information sharing in particular.



These studies also acknowledge the differentiated impact of executive involvement, exercise of formal authority, and informal leadership as manifestations of a more general leadership concept. However, this literature⁴ does not closely and systematically analyse the mechanisms through which these variables affect information sharing and multi-sectoral collaboration. The present study shows the effects of these important variables and explains some of the causal mechanisms involved in this complex phenomenon by disentangling some of these relationships through careful qualitative analysis. In doing so, this study extends this basic framework to incorporate other variables and their corresponding effects and clarifies why these factors are important for cross-boundary collaboration and information sharing.

⁴ See Gil-Garcia, et. al. 2007 for the related literature review.

3. Research Methods and Description of the Cases

The research included eight in-depth case studies of state-level efforts to create the ground work for sharing information across agencies and across government levels in two policy domains: public health and criminal justice. Within the criminal justice arena, we used an action research framework with facilitation, observations, interviews, and document analysis. The public health domain was studied through a retrospective analysis of the state and county public-health response to West Nile virus, using interviews and document analysis. This section presents the main results of our analysis⁵. The results clearly support a core set of mechanisms or intermediate variables that affect the relationships between cross-boundary information sharing and each of the three leadership variables identified: executive involvement, formal authority, and informal leadership. Below we present the different mechanisms found in the cases and the corresponding propositions and causal relationships.

New York State's Response to the West Nile Virus Outbreak

In late summer and early fall of 1999, New York was the site for the first outbreak of West Nile Virus (WNV) in the Western hemisphere. In preparation for a possible re-emergence of the disease in 2000, the New York State Department of Health led an effort to improve the state wide capacity to respond to another outbreak. A critical component of this response capacity was the development of a Web-based integrated information network. This network, the Health Information Network (HIN), was originally created to provide secure Web-based electronic health information exchange for a multi-sector group of organizations including state and local health departments, healthcare facilities, and healthcare providers (Eidson et al, 2001). Based on the existing infrastructure, the state health department worked with other state agencies and local health departments to develop and implement an integrated electronic system used to collect and provide access to West Nile virus related case data. The collecting and sharing of this information was critical to the state's ability to effectively respond to the initial virus outbreak and subsequent re-emergences over the years. The HIN became the platform for sharing data on mosquitoes, birds, mammals, and humans throughout a network of county health departments, state animal and human public health agencies, and healthcare facilities. The creation of this network brought together animal and human public health professionals unaccustomed to collaborating across traditional government boundaries. These professionals were more accustomed to dealing with disease outbreaks restricted to either animal or human health domains, the West Nile virus outbreak shattered these professional and organizational boundaries because it was a disease affecting both humans and animals. Sharing information across these government boundaries was further complicated by the traditional ways in which state and local governments interact in the state. In New York, state and local governments share responsibility for public health; two cities and 33 of the 57 counties maintain full-time health agencies. While the state-level public and animal health agencies provide a number of regulatory and direct service functions to local governments in support of citizens, responding to a public health crisis, such as West Nile virus, ultimately is the responsibility of county health agencies. At the state-level, new relationships needed to be formed among multiple agencies with diverse expertise in human health, birds, mammals, and mosquitoes. Similar relationships needed to be formed at the local and federal levels and then across these levels of government and among organizations such as healthcare providers.

The Response to West Nile Virus in Colorado

The first case of WNV in the state of Colorado occurred in Larimer County in 2002. In 2002, the virus was reported in only birds and horses. The first human cases were reported the following year in 2003. The county health department was responsible for coordinating the response to the initial outbreak and the subsequent annual re-emergence of the virus since then. This response capacity included a cross-boundary information sharing initiative that involved a wide range of Larimer County organizations as well as surrounding counties, the state, and federal government. Similar to New York, in Colorado, local government ultimately is responsible for providing public health services to its citizens. With over 2,800

⁵ See Gil-Garcia, et. al. 2007 for details on the research method employed in this study.

local governments of various types, each having different kinds of statutorily defined authority and responsibility, coordinating West Nile virus response efforts between the state and local governments and even regional efforts among neighboring local governments was a complex task. The cross-boundary information sharing initiative among Larimer County, the state, and neighboring local governments reflected this complexity and was characterized by an interorganizational process of collecting, disseminating, and analyzing information from a disparate group of information providers and users. An effective response capacity for West Nile virus depends on an accurate assessment of how the virus is spreading among the animal population to include birds, mosquitoes, and particularly in Colorado, horses. Tracking the number of West Nile virus cases within this network of animals provides a critical early warning for the possible spread of the virus to the human population. Therefore, the key information providers and users for a West Nile virus response included both animal and human public health agencies at the state, local, and federal levels as well as a mix of public and private sector human and animal healthcare facilities and providers such as hospitals and veterinarian practices. Colorado had a similar state-level system for collecting and disseminating WNV case information to relevant government organizations throughout the state and to the appropriate federal authorities such as the Centers for Disease Control and Prevention (CDC). However, at the local level, the coordination of response efforts relied heavily on a less formal or single system. This ‘system of systems’ was comprised of e-mail, phone, and fax communications as well as ad hoc databases and even geographic information system (GIS) applications. For interaction with the public, the county health department posted case data on the Web in addition to other public communications efforts such as press releases.

Executive Involvement and Cross-Boundary Information Sharing

Executive support has been identified as important for IT projects in general and cross-boundary information sharing in particular. One of the ways executives were found to have a positive impact in the response to the West Nile virus outbreak cases studied was by supporting the actions of influential informal leaders. Informal leaders were found to be powerful actors in the interorganizational efforts. This power was, in part, influenced by the involvement and support of top executives such as agency commissioners. A state-level public health representative with IT responsibilities explains this relationship,

...I really look at the people and see--if you got really good, strong people that work together, that'll make any project successful. And I look at Ivan getting us working on it and Deb, involved in negotiating with the counties and [the informal leader] taking the lead. I mean, these are some really good, strong people that made sure that this was successful. And all of it under the support of our commissioner, you know, which I think is--and she was definitely involved early on in establishing the way we were going to proceed and I think that just worked out well.

P1: Executive involvement has an influence on cross-boundary information sharing initiatives through executive efforts to support the actions of informal leaders.

Another important way executives influenced the cross-boundary information sharing initiatives in the cases was to demonstrate the respect for the autonomy of participating organizations. In the case of New York, this was demonstrated through willingness to consider the concerns of peer county commissioners about disclosure of information about infected birds. With the help of an influential informal leader, the group was able to establish a rule that allowed county commissioners to be notified about WMV cases in their respective counties 24 hours before this information was released to the rest of the state and potentially to the press. A state public health representative remembers some details about this situation,

The counties were really concerned because I guess they didn't want--we want, when we develop applications, we want to make the data available to everyone, O.K.? And the counties were concerned that if a West Nile bird showed up in their county, the other counties would see it and that maybe they could release to the press this information immediately. And so the press would

be notified of a problem before the county commissioner was notified--which happens all the time. I mean, sometimes it's in the newspaper and the commissioners are reading about it before they're notified about it. They were really concerned about a system that we had set up so that the lab results would immediately go in and become available to everyone. And that was like a deal-breaker to them in some ways. I don't really--I think that we should always make the data available. But they were really concerned about that. That's a valid point. They needed time to react and marshal their resources.

In contrast, there were other situations in which the lack of respect for the autonomy of participating organizations negatively affected the willingness to participate and consequently the effectiveness of the cross-boundary information sharing effort. The involvement of top executives can mitigate or exacerbate these tensions and promote or detract rules and mechanisms that ensure a certain degree of autonomy for participating organizations. In Colorado, tensions were created when the state took an authoritative position in its relationship with the counties. State executives did not demonstrate respect for the autonomy of county governments and this resulted in a conflict between these two entities.

The state decided you are going to now use our system. We said "no" because we've already got something we're using. How about we just share data? And there was a big fight--no, you work for us. And we're saying, no, you get our data and it's our data, not yours and there was a big fight. Well, after the fight had ended, we all sat down and got together and said... You know what? What we're getting right now is, here's my system, here's what you will use if you want to do collaboration. Well, that's not collaboration; that's you dictating a system to me and that's different.

P2: Executive involvement has an influence on cross-boundary information sharing initiatives through executive demonstration of respect for the autonomy of participating organizations.

The cases provided evidence that executives have the ability to affect willingness to participate either from members of their own organizations through traditional organizational incentives or from members of other organizations through negotiation. In New York, the commissioner of department of health played a critical role in promoting collaboration across divisions (human, mosquito, bird, mammal) and with other agencies to respond to the WNV outbreak. A senior public health manager identifies the commissioner as a very important actor,

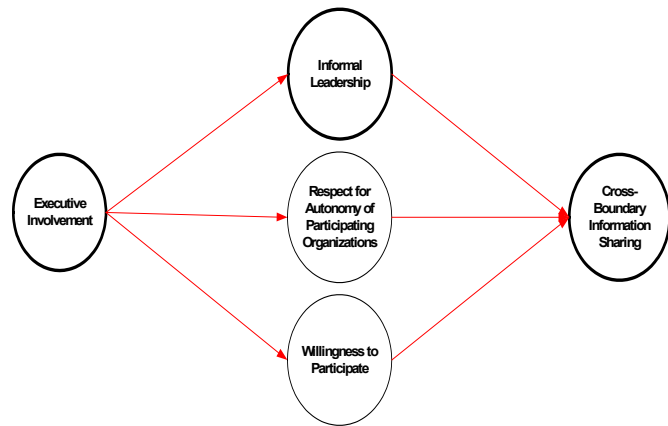
I think you really want to trace it all the way back; you can almost start with our state health department commissioner, you know. She pretty much said we're going do this; we gotta get it done; we don't have much time and we're going to all work; we're going to all cooperate, you know. And I think it was understood by everyone that we were going to work together...

The degree of involvement of and support from executives was affected by the severity of the problem and the potential loss of human life. The nature of the event directly influenced the willingness of many individuals to participate, but also had an impact on how executives promoted participation. A senior public health manager in New York explains the role of executives in increasing the participation,

I think because the top administrators, particularly in Health, saw that there was a real health threat--people were dying in New York City and elsewhere from West Nile. And it was a new disease to the hemisphere, lack of experience and skills with dealing with this disease. We had to come up to speed, define controls and education right off the bat and study it and see just where it was going to go. They made a high priority of doing just that. And therefore, epidemiologists and virologists and all these people came online to work on it. And the information services had to be part of that and it was a statewide program...

P3: Executive involvement has an influence on cross-boundary information sharing initiatives through executive ability to affect the willingness of key actors to participate.

The actions of executives served to highlight the role executives can play in enhancing the capability of informal leaders to affect change in the many organizations involved in response efforts. These actions also served often to positively influence willingness to participate; while other actions, in particular, those communicating a lack of respect for the autonomous nature of some organizations, negatively influenced this willingness. The ability of executives to apply or in some cases, withhold, influenced the cross-boundary information sharing efforts in the responses.



Exercise of Formal Authority and Cross-Boundary Information Sharing

The exercise of formal authority was found to facilitate cross-boundary information sharing by affecting the existence and nature of problems and the necessity of localized and episodic solutions for those problems. In some instances the exercise of formal authority was found to solve some of the existing problems; in others it produced new problems. The case analysis sheds light on how tensions created by the exercise of authority by states can influence the willingness of autonomous local governments to participate in collaborative information sharing. In Colorado this led to problems between the state and some of the counties (See quotes for P2). In a different context, formal authority can help build agreement among multiple organizations. As discussed in the previous section on executive involvement, in New York, counties were concerned about information disclosure. With the help of an informal leader accepted by the counties, the state health department came up with a rule about delaying the public release of laboratory results for 24 hours.

P5: The exercise of formal authority has an influence on cross-boundary information sharing initiatives by affecting the existence and nature of localized episodic problems.

The exercise of formal authority was found to be important to the crisis response efforts; in particular due to the compressed timeframe and the importance of coordination. The exercise of formal authority influenced the development of appropriate and effective strategies for cross-boundary information sharing. In the cases organizations from multiple levels of government and multiple sectors needed to participate. The lack of fit between the strengths of traditional coordination mechanisms such as hierarchies and formal communication channels and the complexity of the interorganizational settings increased the complexity of the response efforts. In New York the legal framework establishes autonomy of local governments promoting a decentralized response. Authority for making decisions about a public health crisis such as the WNV outbreak rests with the counties.

They [state department of health] could suggest things but they couldn't say you had to do something. And from the county's perspective, it would have been a lot easier if the state could have just said, "You need to do this; you have to do this; you're mandated to do this" but that's not the way things happen. Its county rule in New York State and so leaving the decision up to the counties, each county could do different things. And with a disease like West Nile, it wasn't something that was going to stop at a county border. So that often made it very difficult if counties decided to do different things. And so I think that did make it difficult a lot of times because there were differences and opinions about what should be happening and what was in the best interest and what was in the best political interest.

P6: The exercise of formal authority has an influence on cross-boundary information sharing initiatives through the development of appropriate and effective strategies.

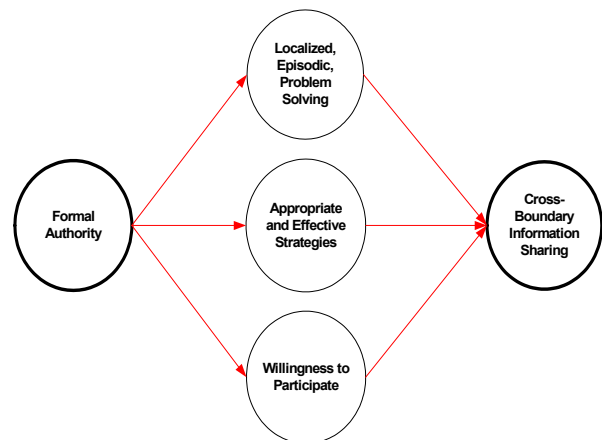
The exercise of formal authority was also found to have a direct influence on the willingness of key actors to participate. As mentioned before, the relationship between the state and the county governments was necessary for an effective response. This relationship was affected by decisions taken at the state level that had implications for counties and their capacity to respond. In some cases, the exercise of authority by the state reduced the willingness of the counties to participate. One example of this was the creation of bioterrorism regions in Colorado. A county-level public health manager in Colorado remembers,

Well, just recently, with the state getting all the bioterrorism money, the state has basically forced people into regions, whether they make sense to be regions or not. I mean, we're in this region that goes from our county all the way to the Kansas-Nebraska border and to some counties that are along the Kansas-Nebraska border, as far south as Colorado Springs. Now if this makes any sense to you as being a region but ..., they had some other thing divided up that way and so they said, these will be your bioterrorism regions. So, yes, we do have those. They're sort of state-imposed; they're not natural, people who naturally would necessarily be working together.

The analysis highlights the need for collaboration and information sharing among state and local governments as well as other organizations in the response efforts. The data also showed the need for each actor, states in particular, to be sensitive to the differentiated needs of local governments as well as their own needs in creating aggregate data. In New York, there was a tension between the state and New York City (NYC) regarding the development of the Health Information Network (HIN) for disease surveillance. The state was trying to use its authority to develop a single solution for all local governments, but initially did not take into consideration that NYC is much different from other local governments in the state. Early in the initiative, this affected NYC's willingness to participate. However, the state named a public health manager from NYC the co-chair of the data committee and that helped give NYC more influence and increased their willingness to participate.

P7: The exercise of formal authority has an influence on cross-boundary information sharing initiatives by affecting the willingness of key actors to participate.

The cases highlight the mechanisms through which the formal authority to influence cross-boundary information sharing. Formal authority served to both exacerbate and mitigate localized episodic problems in the cross-boundary information sharing efforts. The creation of appropriate and effective strategies for cross-boundary information sharing was positively influenced in the cases through both direct authority being exercised within agencies and through support of informal leaders from across other organizations. The cases also provide insight into how formal authority influences information sharing by highlighting willingness to participate as an influence mechanism.



Informal Leadership and Cross-Boundary Information Sharing

In both New York and Colorado informal leadership was instrumental to building trust and willingness to participate among individuals from different levels of government and sectors. Informal leaders built connections among groups, looked for solutions, and created an open environment.

...and so she was very responsive and, as I said, I don't know if it affected [the results of the response] but I thought it was a good working relationship where she seemed very interested in input, to what the needs were and what would be helpful to people. And I think she really tried to get it done on the other side, what she thought would be helpful.

Informal leaders did not wait to receive directions; instead they took initiative and started sharing information across organizational boundaries. A state-level public manager from Colorado explained how they started this process, "...and so it's not something, for instance, that high up in my agency [the state health department] or high up at CSU [Colorado State University] said, well, you guys need to get together and share this information. It was something that I knew about and I called the director of their diagnostic lab, who I know from other issues over the years..." Informal leaders were able to talk to individuals participating in the response in their own words. In fact, some of them built trust among participants by playing the role of "brokers" between public health professionals and information technology (IT) staff. A state-level public health manager explained how an informal leader talked to a senior public health manager in another agency highlighting aspects of the effort that were important for him in his own terms and, in that way, got his buy-in. "She persuaded him also on the importance of health... importance to the research to understand the transmission of the disease and they talked on that level..."

P8: Informal leaders have an influence on cross-boundary information sharing through their ability to build trust among key participants and leverage existing trust embedded in their professional networks.

Each response required a strategic vision to guide the cross-boundary information sharing efforts. However, to be successful, they also needed to find creative localized solutions to important problems. Informal leaders were found to play a very important role in this regard. They were negotiators of localized and episodic solutions that allowed the cross-boundary initiatives to happen and be more effective. An informal leader in Colorado was able to provide a flexible information system that allowed information to be updated at any time. Initially this was not possible and it took the county one or two days to have their emergency page available in their Web site. An informal leader was essential in solving this problem and moving the initiative ahead by empowering the IT staff to develop and implement a technical solution that would enable the timely reporting to the public of important information related to the virus.

For New York, deciding which identifiers to use for tracking information about animals and humans was an issue, especially due to the large number of organizations involved and how different they were. Again, an informal leader was able to negotiate the use of certain standards, even with powerful actors. A public health representative from New York clearly explains this,

You gotta go back to [the informal leader]. She really, you know, made it work. I don't know if you're familiar with [senior public health manager for different state agency]. But he's a very intelligent, interesting guy. He's always making his point. But he's got a very strong personality and he wants to make sure when he's dealing with the [state department of health] that it's going to be a benefit to him.

P9: Informal leaders have an influence on cross-boundary information sharing initiatives through their ability to apply localized and episodic solutions to complex problems.

Informal leaders' use of boundary objects to facilitate a conversation between individuals from different organizations and/or different professional backgrounds was found to play an important role in the development of the information systems used in the responses. In New York, an informal leader helped

design the forms in the system and promoted a faster use of prototypes to negotiate with the counties. This was very important in the response due to the time pressure.

P10: Informal leaders have an influence on cross-boundary information sharing initiatives through the use of boundary objects such as prototypes, documents, plans, etc.

The cases illustrate the role of informal leaders in creating appropriate and effective strategies for developing cross-boundary information sharing. Creating these strategies required government agencies to work with other organizations in new ways. In the two cases, informal leaders helped develop these strategies by first envisioning the different organizations needing to be involved and the associated interorganizational business processes. Next, the informal leader negotiated new relationships among the network of key players turning vision into reality. In New York one of the key informal leaders at the state level demonstrated this capacity. According to a state manager,

She took the lead in the whole thing and really, she was the one that did all the negotiating. She was at all the meetings. She really led the group in a way that was very, very efficient. She's a very capable person. She made the--the system was really broken down into three major systems--birds, mosquitoes and humans. So she took the lead on that and kind of the mosquito group kind of followed along so, you know, and even the human stuff came in later. But she took the lead on that and really set the standards for everyone else.

Informal leaders sometimes have formal authority that allows them to be at the same time supporting and leading initiatives. One public health manager with IT responsibilities had this to say when asked about the foundation of his department's cross-boundary information sharing strategies, "[the public health director] primarily, I think; she really has a great vision on where she thinks public health should be and how to improve that and is willing to fund it... She wants to find better ways of using information technology." This individual played a dual role as a formal leader within her own agency and informal leader for the broader interorganizational initiative. The cases illustrate how informal leaders contributed to appropriate and effective strategies by encouraging individuals within their own organizations to become more involved and knowledgeable of the interorganizational setting.

P11: Informal leaders have an influence on cross-boundary information sharing initiatives through their contribution to the development of appropriate and effective strategies.

Informal leaders were instrumental in the cases in drawing together people and organizations with little prior knowledge and little past experience working together. They used a variety of techniques to clarify the roles and responsibilities of key individuals and the organizations in the response efforts. According to a state manager, a lack of clarity of roles and responsibility was one of the biggest challenges,

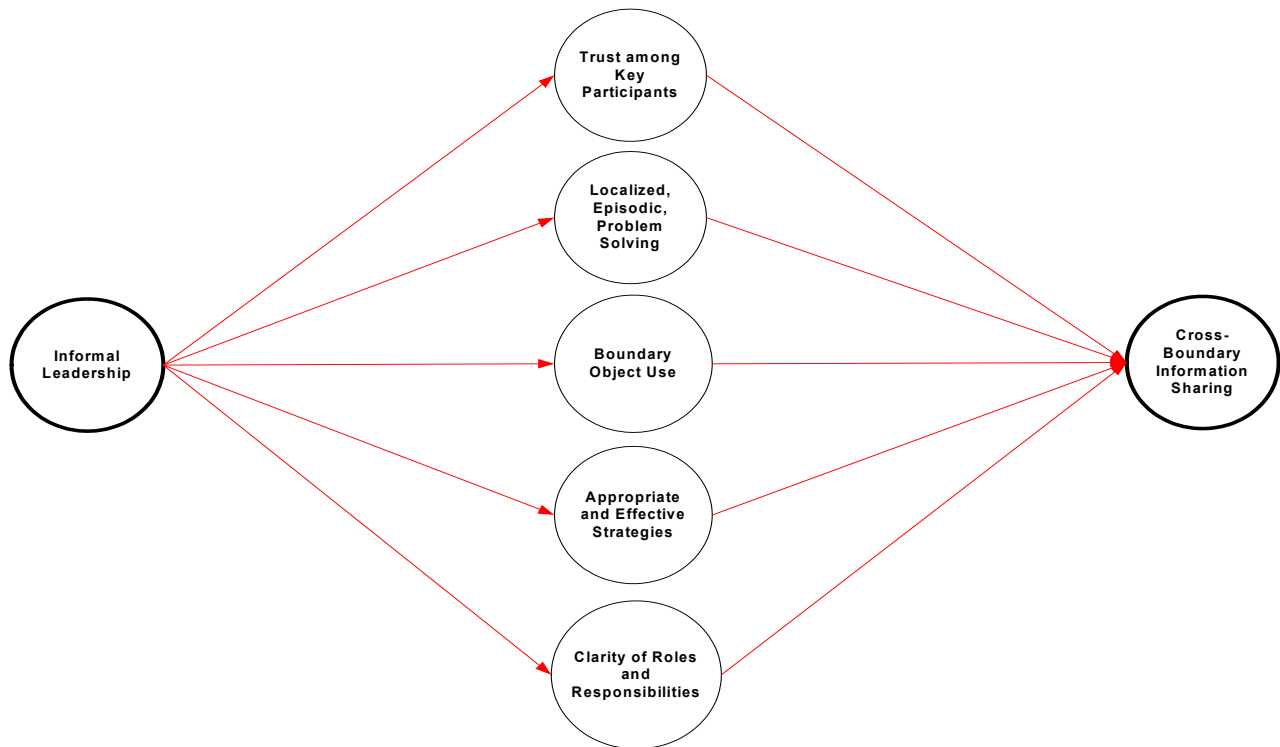
One of the big [challenges] for our program was the interagency issue because of the birds and mammals, because that does cross the multiple agencies. ... There had not been a disease that spread so quickly and affected so many different species where you had to have so many different agencies at all different levels involved. And how would you keep everybody involved and allow them to have input and knowledge all at the same time, as we said, protecting confidentiality and allowing local jurisdictions to handle things before it became public. ...And so all of the groups--there was one on bird and mammal, one mosquito, one on public information--these groups had people from all the different agencies so universities, local health, other agencies. And so those were issues that crossed all of the applications. And so these interagency working groups were able to develop components for the 2000 West Nile plan.

In Colorado, clarity of roles and responsibilities was critical to the efforts of one informal leader to integrate a large and sprawling network of local governments into their response. The informal leader, a senior public health manager for the state, identified single points of contact at each of the local governments to be responsible for receiving and sharing information related to the spread of the virus with their locality. The public health manager made it very clear this information would be disseminated only to these identified individuals and they would be responsible to share it with others in their government. This process, it turned out, was not easy to implement with many individuals attempting to redefine the initially established roles and responsibilities. Once accepted, the new arrangements were generally adopted for the long term as important channels of communications.

...each county had a single point of contact and that point of contact was the inlet into that county. And so when I had to send something out, I sent it to that point of contact. And it was their job then to distribute that to all of the people within their agency but also all the other agencies within their county who may want to know about that information. And so it would come out and it'd branch out and then there'd be more branches and more branches. But what that enabled is that this point up here didn't have to communicate with three hundred branches at the bottom of the tree; you had this kind of gradual. ... at least initially; that was a little bit of a paradigm shift for some groups. Because I got I don't know how many calls about, you didn't send me this press release. Well, yeah, it was sent to your county point of contact. Well, I didn't get it and I want to get one. Well, then you need to call your county point of contact and make sure that you're on the loop for their distribution. Well, no, I want you to send it to me. Well, no, you need to get your county point of contact--which often was somebody in their own agency. Well, that's not, you know, that [is not] my responsibility. I can't be responsible for communication problems within your agency--that's your problem; that's your issue to resolve. And so we got a lot of that early on. Once I think those were set, we didn't hear that complaint and I think most people thought it worked pretty well.

P12: Informal leaders have an influence on cross-boundary information sharing initiatives through their ability to clarify roles and responsibilities.

The cases provide new insight into the mechanisms through which informal leaders influence cross-boundary information sharing. Informal leaders in the cases used their ability to build trust among participants and to engage in localized problem solving through the use of boundary objects to influence the cross-boundary information sharing efforts in the responses. Their ability to engage participants in effective strategy development can also be connected to the success of these leaders to create clarity around roles and responsibilities in these collaborative efforts.



4. Discussion

Overall, this study provides further evidence of the importance of leadership and authority in cross-boundary information sharing among multiple organizations. In doing so, it extends this basic framework to incorporate other variables and their corresponding effects and clarifies why these factors are important for cross-boundary collaboration and information sharing. Therefore, the study contributes both to our current understanding of interorganizational collaboration and cross-boundary information sharing by systematically analyzing the mechanisms through which executive involvement, formal authority, and informal leadership affect these initiatives. The study also provides the foundation for future testing of an extended theoretical framework as a way to fill the gap in what is known generally about the mechanisms through which executive involvement, formal authority and informal leadership influence cross-boundary information sharing.

The cases served to unpack our understanding of executive involvement in cross-boundary information sharing initiatives. Executives in the cases exerted influence through their involvement; they could support or disapprove the actions of informal leaders, demonstrate and ensure respect for the autonomy of participating organizations or lack of respect, encourage or discourage individuals within their own organizations to participate, and increase or reduce the financial resources available for the response efforts. The exercise of formal authority also affected interorganizational collaboration and cross-boundary information sharing by producing or mitigating problems, enabling or hindering the development of appropriate and effective strategies, and encouraging or discouraging individuals to participate in the initiative. Finally, informal leadership was also critical for these complex initiatives. Informal leaders built and held trust among participants, found creative localized solutions to problems, effectively used boundary objects to communicate ideas among individuals from different organizations and backgrounds, contributed to the development of appropriate and effective strategies, and helped to clarify roles and responsibilities. Although the evidence comes from two public health crisis response efforts the findings may apply to other situations in which interorganizational collaboration and information sharing is required. Future research should explore if the propositions suggested in this study are applicable to other realities and social phenomena.

5. Conclusion

As governments around the world turn to information sharing as a lead strategy for developing response capacity for problems in a wide range of programs and policy areas, efforts to extend what is known about the factors that influence these our capability for success become increasingly important. Events such as the 2002 emergence of the WNV in the US and its spread across the country since then, have shown that gathering, handling, and sharing information in response to a public health crisis, requires not only adequate technical capabilities for sharing information across organizational boundaries and among multiple levels of government, but reliance on strong interorganizational collaboration skills. The WNV response required collaboration and information sharing among animal and human public health professionals, as well as healthcare facilities that spanned state, local, and federal jurisdictions, all of whom were unaccustomed to working together across traditional organizational and jurisdictional boundaries. This event and events like it, when systematically studied, provide great opportunities for new insights into the capabilities of governments world-wide to succeed in the new knowledge economy.

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iv. Human Resource Issues

MANAGING HUMAN RESOURCES IN THE KNOWLEDGE ECONOMY

Mr. Christopher Harman

In the management of human resources, knowledge workers have traditionally been viewed as ‘high value added’, as well paid and the ‘elite’ of a workforce. With globalization and the gradual equalization of access to technology, this is no longer the case. Knowledge workers exist at all levels of the workforce, from the well paid to the less well paid. Just as globalization potentially leads to the equalization of prices for goods and services, so globalization potentially leads to an equalization, a convergence, in wages and rates of pay for knowledge workers. Limits of physical mobility, which may have prevented this in the past, are removed by ‘cyber-mobility’. Individuals, as much as organizations, can have a global presence, working in virtual teams anywhere in the world, regardless of where they live.

Within this type of economy, knowledge management assumes greater importance. Traditionally it has been seen as involving organizational processes and systems (particularly ICT systems). It has been about the management of information and the interface between individuals and that information. However, effective knowledge management is more than that. Effective knowledge management is about managing both people and systems so the information is used. It makes information accessible to individuals and encourages individuals to develop and apply their knowledge for the benefit of the organization. It is an active transformation of information from something in itself, to something useful, useable and used.

The working definition we have adopted is that:

Knowledge management is the acquisition and use of resources to create an environment in which information is accessible to individuals and in which individuals acquire, share and use that information to develop their own knowledge and are encouraged and enabled to apply their knowledge for the benefit of the organization.¹

The people dimension implicit in this view emphasizes the key role for Human Resource Management (HRM) and Human Resource Development (HRD) in knowledge management.

This working definition also highlights the multidisciplinary approach necessary within organizations committed to knowledge management. It emphasizes that successful knowledge management is more than just implementing new technology and new systems. It has to create a culture, an organizational climate, in which the knowledge workers actually want to apply their knowledge for the benefit of the organization. It has an ethical, social and moral dimension as it speaks of the type of organizational culture necessary for successful knowledge management, a culture in which the sharing of information and knowledge is valued.

The areas of HRM and HRD, in both public and private sector organizations, where we have seen the most impact from approaches based on knowledge management are:

- Recruitment
- Retention and Succession Planning
- Pay and Reward
- Training and Development

The common themes affecting these areas, and the focus for this discussion paper, are the HRM impacts of the knowledge economy arising from changes to:

- ‘Power’ relationships between organizations and individuals
- Communications

- Management Roles
- Values and ethics
- Managing Change and Managing Organizational Culture

1. 'Power' relationships

The development of a knowledge based economy gives to knowledge workers the power that arises from the ability to solve the critical contingencies facing an organization². This challenges existing power relationships within organizations and is particularly evident in high tech industries, where the contribution of a single individual can significantly impact profits. However it is equally true in public sector organizations, where it is individuals working together, or in teams, rather than processes or systems, that deliver results – and where there is a high level of competition for talented individuals.

This shift in power relationships between the organization and the individual means that knowledge workers are increasingly able to determine that they are managed in ways acceptable to them. This is a particular challenge in public sector bodies where traditional models of management are designed around rigidly designed and specialized job roles. Far better to see an organization as composed of a set of knowledge requirements rather than specialized job roles. For HRM activity in recruitment, this would mean recruiting talent and allowing jobs to develop around the person. It also means ensuring that the recruitment process is focused on the recruit rather than the role. This does not mean that selection procedures should be any the less rigorous. It does mean, in a knowledge environment, the selection procedures need to be acceptable to the potential recruit, reflecting the shift in the balance of power.

The needs of the individual have to be taken into account when success depends on their willing participation and their willingness to share knowledge and share information. Their willingness to do this will, in turn, depend on an alignment between the values of the individual and the values of the organization. This requires an organizational paradigm based on partnership and common interest.

2. Communications

A particular impact of this is on the demands of staff to understand the wider context in which their work takes place. This wider involvement not only meets the needs of the knowledge workers, but also supports the free flow of ideas and information – creating the synergies that lead to new solutions and creative working. As one public sector Chief Executive Officer stated:

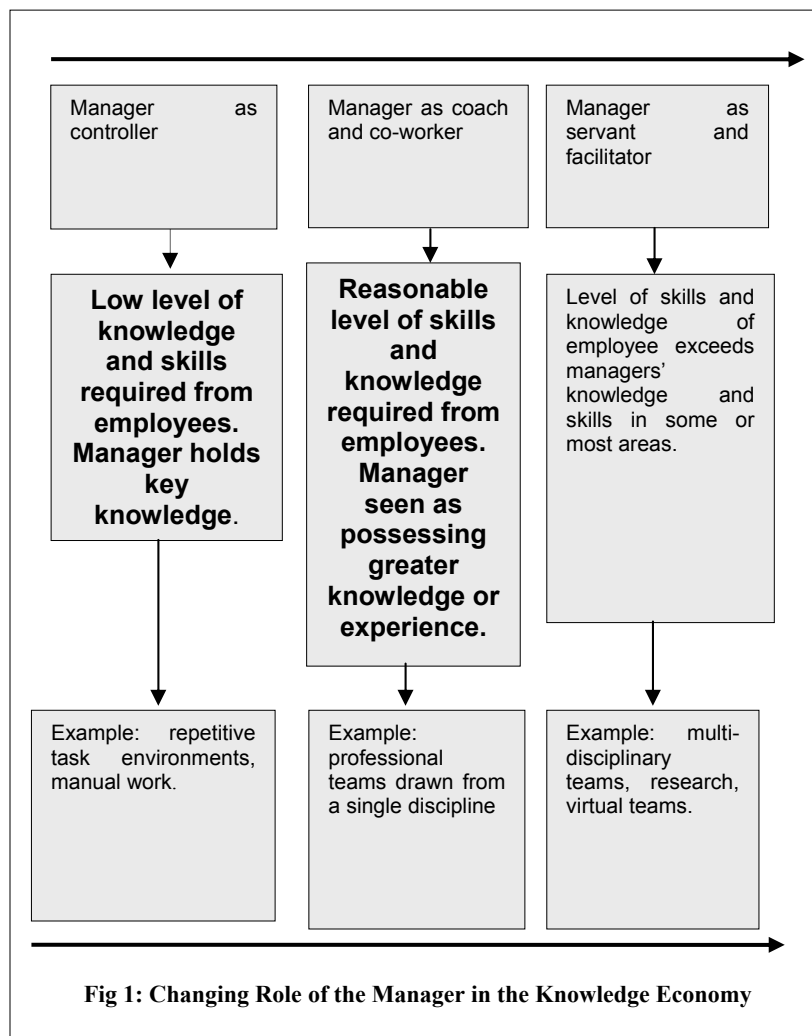
“It’s no longer acceptable, or effective, to have people working in the old traditional watertight compartments. We have to recognize, and facilitate the flow of information within the organization, the sharing of knowledge and experiences”.³

The need to share information widely also makes effective communications a strategic priority for managers and for the HRM function. Typical practices in the UK public sector designed to deliver this include:

- Staff Forums – where senior managers meet with staff and explain decisions or communicate policies and strategies in an informal setting.
- Electronic bulletins – weekly updates circulated electronically to all staff
- Traditional printed organizational newsletter and newspapers
- Regular formal meetings with staff representatives at departmental and corporate levels
- Regular briefings cascaded verbally via managers through-out an organization
- Open access to minutes of meetings/agendas via an intranet
- Pod casts of presentations and speeches by senior managers/political leaders

The emphasis in such approaches is to move away from secretive and ‘need to know’ approaches and to create an open environment. In this environment information flows freely and individuals self-select their level of involvement. An underlying assumption is that knowledge workers are the best equipped to decide what information they need. Managers are not required, or expected, to control or filter the flow of information.

This can be seen as a challenge to the role of the manager -- particularly by those managers brought up in traditional, hierarchical public sector organizations. In such organizations their role, and their power, has been based on the control of information and the control of staff. The change in relationship between knowledge workers and the organization is leading to a paradigm shift for managers – towards a facilitating and coaching role.



This is however, only part of the transition in the management role. In an environment that is heavily dependent on the knowledge of individual workers and where the knowledge and skills of the workers can be greater than that of managers, the transition in the manager’s role will take another step from coach and facilitator to servant -- the manager’s role becomes to help the managed perform. It is this progression that is influencing the approach to HRM in the knowledge environment.

3. Management Roles

Experience indicates that the effective manager in a knowledge environment supports the acquisition and sharing of information and expertise by:

- Encouraging individuals to use their knowledge and expertise
- Facilitating innovation and creativity and encouraging new ideas
- Representing the interests of the team/individuals to the organization
- Supporting the work of teams, both physical and virtual.

In this context, the management of virtual teams forces a less controlling approach to the management task. It emphasizes skills such as project management, prioritizing and planning, setting objectives, monitoring outcomes. An example of this was a public sector body involved in regulatory activities. The research arm of the organization employed four managers who, between them, were running projects involving some 400 people. However these teams were composed of people from a number of different organizations – university research departments, private sector companies and other public bodies across national boundaries. The managers had clear targets and deliverables, but no direct control over the people engaged on the project. The use of web-based technology meant that the teams worked as virtual teams. The managers had to deliver results without the traditional tools of ‘command and control’. Motivation was based on the intrinsic motivation in the work and the role of the managers was to facilitate, not direct.

This example also points to another feature of HRM in the knowledge environment, which is the fluidity of organizational boundaries. Working together towards an outcome does not mean working for the same organization. Within local government, in the UK, this is recognized in the creation of local strategic partnerships. These partnerships bring together different agencies and groups to develop an integrated approach to delivering outcomes for local communities. They share information, knowledge and resources across organizational boundaries.

Working in such a way involves fostering innovation and creativity towards a common end. For HRM in organizations this commonly involves:

- Encouraging collaboration
- Making ideas accessible
- Exploring (and resolving) conflicts
- Encouraging dialogue
- Encouraging a sense of community, common interest and trust.

When working in such a way it can also involve, at an individual level, suspending judgement on occasion and being tolerant of different viewpoints.

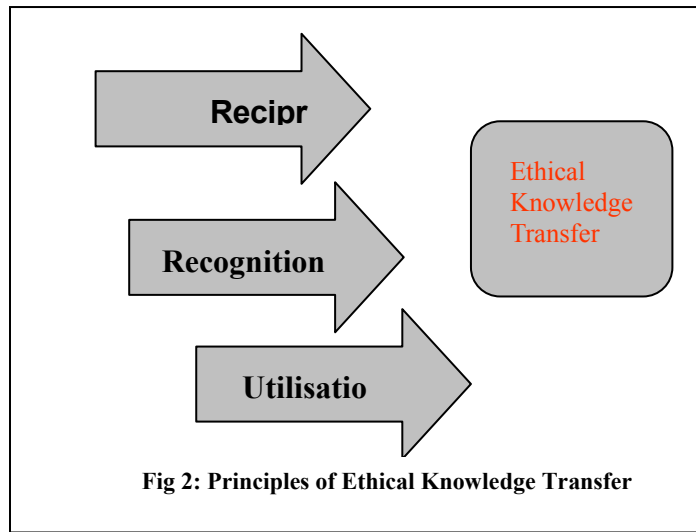
For managers to succeed in this type of environment, HRD activities need to encourage and equip them to:

- Challenge their own assumptions
- Understand how their actions can help or hinder creativity and innovation
- Learn to trust, accept (and productively manage) ‘maverick’ behaviour
- Structure work to maximize learning opportunities
- Accept that some mistakes will occur
- Coach and Mentor others as an intrinsic part of the job
- Redefine problems as learning opportunities
- Recognize and reward innovative contributions

For managers this involves understanding individuals and teams, and having a willingness to be open to new ideas and development. For the organizational HRM policies, it means recognizing and accepting that there is a need to achieve a balance between the interests of individuals and the organization.

4. Values and Ethics

For individuals to actively contribute in a knowledge environment the balance in HRM policies and practices needs to have an ethical basis that can be recognized and accepted. This is more clearly seen in situations of knowledge transfer, for example collaborative projects, mergers and acquisitions and, at national level, the transfer of skilled workers from one country to another. In a knowledge transfer, knowledge workers are being asked to pass on their knowledge to others or facilitate the organization in encapsulating and encoding what they know. This can be a threatening exercise for the individual if their value is based on what they know.



In examples we have looked at, cooperation was more readily obtained where there was an ethical framework based on recognizing the mutuality of interest. Three principles that we found to be common in successful knowledge transfers were; reciprocity (a mutuality of benefit for the individual and the organization, whether economic, social, developmental etc.), recognition (that is an acknowledgement that there is shared ownership of the knowledge, between the individual, the organization and wider society), utilization (that the result of the knowledge transfer will be a wider sharing and use of the knowledge).⁴

It is no accident that this model involves the concept of the social ownership of knowledge. The knowledge that transfers does not just belong to the individual, or to the organization that pays their wages, but to society as well – as it is society that has invested in the infrastructure. It has provided the education and development of the individual and the framework within which both the individual and the organization exist and operate. Incorporating the idea of the social ownership of knowledge in knowledge transfer becomes particularly relevant when considering the legitimacy of transferring knowledge workers between nations. A current example is the involvement of HR in the overseas recruitment of key public sector workers to the UK.

5. Culture and Change

The working definition of knowledge management given in this paper has profound implications for organizational culture. It is the culture that helps bridge the gap between the provision of technology and information and its effective use, for the benefit of the organization, by individual knowledge workers. Experience indicates that a culture conducive to knowledge management is one that values:

- Networking and broad contacts externally and internally
- Respect for individuals
- Creativity and innovation
- Trust
- Sharing of ideas and information
- Sound underlying systems and procedures
- Continuous learning and development

When engaged in culture transformation, making an organization fit for the knowledge economy, it is usual to invest heavily in the systems and processes. We will all be familiar with examples of major IT investments and business process re-engineering. We will be equally familiar with how often such projects disappoint. This is not simply a question of over ambition, or the complexities of scale – projects successfully implemented from the technical perspective can still disappoint in terms of delivered outcomes. A challenge in any such project is to effectively manage the culture of the organization. To align that culture with what is required in the knowledge economy. This is not to say that there is not significant investment in ‘culture change’ programmes – there often is. Typically this involves considerable expenditure in workshops and training sessions, away days and special events. Generally they involve rolling-out within the organization a model of the desired culture, accompanied by a statement of corporate values. However, without understanding an organization’s existing culture such programmes are less likely to succeed. Understanding an existing culture involves understanding what creates it, what drives it, what reinforces it. Where change programmes do not succeed, the technology driven changes will also often fail to deliver the promised benefits.

It is generally not the absence of ability or skills that feeds such failure. In cases observed there has, if anything, been a surfeit of skills. Rather it is an over emphasis on the vision with little regard to the past that has led to the present. An inability to encourage contrary viewpoints and dissenting opinions, an inability to manage diversity in its broader sense. There is an old saying in management about ‘not rocking the boat’ – but if a boat is not rocking it’s not going anywhere. Real boats rock.

Where such change programmes are more successful, there is usually observable evidence of conscious working with the existing culture. The change is based on understanding and building on those values inherent within the existing culture that are conducive to effective knowledge management. This approach can be just as far reaching in delivering change, but is subtler and is more likely to be acceptable to knowledge workers. Building a culture for knowledge management through this approach still requires changes to systems and processes. It still requires changes to the ways of doing things; to the HRM policies and activities which transmit the organizational culture to new employees and reinforce the organizational culture with existing employees. What this approach does not involve, is trying wholesale to replace the existing culture. Importing a new culture and a new way of doing things with no regard to what already exists. The more successful change programmes align new values with old, the new culture with the old culture. They do not seek to confront the old culture head-on but rather work with and through it.

6. Conclusion

Knowledge management, from the HRM perspective, is more than just the management of information systems, more than just the management of the interface between people and those systems. Effective knowledge management facilitates the acquisition of knowledge by individuals. It encourages them to apply their knowledge for the benefit of the organization so that competitive advantage and service excellence are achieved.

In this context, the direction of travel for HRM is towards policies that respect and recognize the requirements of knowledge workers as individuals. HRD activities that support the changing management role and promote an understanding of organizational culture. Typically, HRM attempts to meet the expectations of knowledge workers through policies designed to facilitate differing 'lifestyle choices', through actively articulating the organizational values, supporting involvement and respecting diversity. Success will be seen in creating a culture that supports the sharing of knowledge and information, creates fluid organizational boundaries and focuses, in the public sector, on bringing resources together creatively to deliver social outcomes.

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3 David Cowan, former Chief Executive of Winchester City Council, cited in “*Knowledge, E-Government and the Citizen*”, Harman and Brelade, Knowledge Management Review *Vol. 4 Issue 3* (Melcrum Publishing)

4 “*Doing the Right Thing in a Knowledge Transfer*”, Harman and Brelade, Knowledge Management Review *Vol. 6 Issue 1* (Melcrum Publishing)

MANAGING KNOWLEDGE THROUGH EMPLOYEE FIT FOR TRUST IN GOVERNMENT

Dr. Zabeda Abdul Hamid

1. Introduction

The concept of trust is an issue that cannot be taken lightly and can be applied in various areas of life; from trusting an individual to trusting an organization. It is especially important when the respective organization is the government of a nation. Governments are politically created entities whose main duty and responsibility is to ensure the safety and well-being of their citizens while providing them with goods and services (Vigoda-Gadot and Yuval, 2003). That is a serious responsibility to shoulder when the government is dealing with the wellbeing of thousands, even millions of people.

In order for the government to fulfil its significant responsibilities, the citizens finance the government and its programmes (Vigoda-Gadot and Yuval, 2003), thus they expect to be provided with efficient service and quality products by the government (Chi, 1999). Their involvement is only to the extent of financing the government as the majority of the general public takes a backseat when it comes to politics. They are quite willing to leave the ultimate political decision-making regarding the progress of their nation and its implementation, in the hands of the few people elected to represent them. Without playing an active role in politics, it would seem that the general public places a high degree of trust in the government that they will be provided with the much needed services and quality products. However, there is research conducted in different countries that indicate in general that the public trust in government and its administrative branches is low (Phar, 1997). This is particularly worrying if the governments are making political decisions for the betterment of the nation without the full support of the public. Lack of trust in government would mean less commitment in supporting the government's ideas, policies and implementations by the people and this could lead to many disruptions in the daily activities of the country.

Therefore, in order to gain the trust of the people, it is prudent for governments to design and implement new ways of managing the services provided by the public authorities. This would consequently lead the citizens in having more faith and supporting their government. Although there are several approaches, this paper will only be focusing on the perspective of utilizing knowledge management (KM) within the government sector in order to make civil servants even more knowledgeable in carrying out their work. A more efficient workforce could provide effective service and quality products that would please the general population. Only when the general public is kept content are they more likely to trust the government.

More specifically, to increase trust in government from a KM perspective, this paper focuses on the employee. This employee perspective comprises of hiring the right people for the right positions through Person-Job Fit (P-J) and ensuring that the employees are compatible with the organization through Person-Organization Fit (P-O). Employees who are knowledgeable as well as comfortable in the workplace have the tendency of being more committed to their job. Thus these employees are willing to learn more, do more and share more information with their colleagues. This would increase the knowledge base, as well as improve the service quality of the organization, which is the government in this case. As mentioned above, satisfaction in the products and services provided by the government would in turn increase the trust of the people. The following section will elaborate on this argument further.

2. Discussion

Trust in Government

Trust in government is important for a country since Knack and Keefer (1997) propose that growth in GDP was higher in countries where people trusted one another. Furthermore, GDP growth and lower levels of corruption resulted in more trust in civil society (Slangen et al., 2003). Hence this is a win-win effect for the government and the general public because if the public are to trust in government, the authorities have to increase GDP and an increase in GDP in turn further leads to more trust in government. In order to achieve the target of increasing trust in government, the government must think and behave like a private organization and consider the general public as their customers. In a business, an organization will not survive unless customers are willing to buy and use their products and the organization gains product recognition from the public. Trust in government works the same way. If the government is to gain recognition and faith in their products and services, they would have to consider their actions, attitudes and types of services or products offered. Wiig (2002) mentions that a competent administration with capacity and influence can be a great benefit to society. An incompetent one can lead the nation to ruin. Therefore, there is a need for government organizations to be more customer-focused as well as gain more knowledge in the services offered (McAdam and Reid, 2000).

Also, in discussing about trust in government, we are actually looking at people's perceptions towards the public administration. This notion is in line with Straten et al. (2002) and van der Schee et al. (2006) who state that trust in government can be seen to be the trust placed by a group or an individual towards the societal institution or system, while being confident that the group or individual will be competently taken care of in the long term. As trust is a function of the institutional environment, this suggests that the government has a large role to play in making sure that there is a harmonious balance within the nation in terms of socio-economic factors (Slangen et al., 2003). However, Nye et al. (1997) has found that in many modern democracies, there is a great deal of dissatisfaction with the administration. This is not a good situation for any government to be in because if the people's confidence in the public services falters, they will be less likely to trust that the promised projects and programmes will be established or fulfilled (Slangen et al., 2003) which could lead to all manners of complication. In extending Nye et al.'s (1997) findings, Vigoda-Gadot and Yuval (2003) state that one of the crucial causes of lack of trust in government was the dissatisfaction in services offered by the government, which include the quality, type, policies and procedures as well as responses pertaining to the services. From a common sense point of view, this is perfectly logical. If a private company were to provide their customers with substandard service, complicated policies and procedures, as well as lack of response from customer feedback or complaints, then it is only a matter of time before the customers would become increasingly dissatisfied and lose complete faith in that company. The government is no different from a company. It is in itself an organization, a rather large one, but nevertheless, still an organization. As such, the general public as the customers will expect a certain degree of quality and manner of service or else their trust in the government will undoubtedly decrease substantially. Therefore, there are some governments that utilize performance evaluation as a measure to gauge customer i.e. the general public's, satisfaction (Vigoda-Gadot and Yuval, 2003) to monitor the performance of the public services.

On a basic level, trust in government is achieved through good socio-economic growth which benefits the people by being able to provide quality services (Miller and Listhoug, 1998) such as healthcare (van der Schee et al., 2006) education, infrastructure and a stable life. Protection of property rights, lower levels of perceived government corruption as well as high economic growth (i.e. high GDP) are factors in increasing trust in government (La Porta et al., 1997; Slangen et al., 2003). It is also the duty of the citizens to indicate that they are satisfied with these institutions and public sector services, as this satisfaction is the prime indicator to the government that they are doing their duties well or that it is inline with their political attitudes towards governance (Miller and Listhoug, 1998).

In addition to the factors stated above, the internal organizational political environment is also important for increasing trust in government. The work culture shaped by the organization will affect the attitudes and behaviours in the public service in terms of job satisfaction, organizational commitment or even turnover (Vigoda-Gadot, 2002). This is because a positive work culture that is supportive of employee needs and their welfare would lead to an increase in job satisfaction and organizational commitment while decreasing turnover. Furthermore, the quality of service provided to the customers, namely the general public, by these employees will also be influenced by the level of their satisfaction and commitment to the organization and this, in turn, will affect the trust people have in the government. Moreover, satisfaction of the people in the policies and procedures attached to the services plays a role in increasing trust in government (Ulbig, 2002). If the people view the process as efficient and neutral, and perceive the authorities as fair, honest and trustworthy, this would enhance their trust in government. Therefore, it is crucial that the government develops and maintains professional staff, takes due care to satisfy their employees and creates a fair remuneration system for the overall satisfaction of their staff (Vigoda-Gadot et al., 2003), in order to increase responsiveness to their citizens (Miller and Linstead, 1998) thus promoting trust.

Furthermore, to create trust in government and in the public service, the managerial quality of the government should be taken into consideration. State leaders and public officers need to improve the output and outcome of the nation to a level that builds a positive image of the government and provides satisfaction for its people. Managerial quality leads to a higher level of actual and perceived administrative performance. Administrative performance is vital to the overall levels of citizens' satisfaction especially when it is related to responsiveness towards customers (Vigoda-Gadot and Yuval, 2003). This indicates that it is possible that the level of responsiveness from the government and the satisfaction achieved by the general public could result in trust in the government by the people. Therefore, positive attitudes towards the political leaders and the state of the nation are important criteria in achieving trust in government as it is administrative performance that leads to trust instead of trust leading to performance. To recapitulate, managerial qualities, as well as high levels of performance, need to be taken into consideration, and only then can a real level of trust be achieved in order to support the democratic foundations of the state (Vigoda-Gadot and Yuval, 2003).

In addition to managerial quality and government performance, public trust in authorities comes partly from transparency and accountability of the government for their actions and decisions (Lebel et al., 2006). Transparency and clear accountability gains much respect among the people (Lebel et al., 2006) if the citizens believe that the government is doing what is best for the nation. When governments plan to undertake a project or initiate policies, the promises made are a criterion in which the general public will weigh heavily in their evaluation of whether or not to trust the political leaders. If the public is left unaware of how government decisions are made, and to what purpose, the lack of transparency within the government could leave the public with suspicion as to the motives of the authorities. People generally do not like to be kept in the dark about matters that affect their welfare. Moreover, they do not like to think that their hard-earned money, which goes to the government through taxes, is being used for anything other than for the growth of the nation. If the promises made by the government are not kept or followed up, or the developments carried out do not benefit the country as a whole, then the general public will be left with mistrust of the authorities (Lebel et al., 2006). Therefore, it is vital that government authorities are transparent in their judgements, and are active in fighting corruption among their members. More information provided in a timely fashion to the general public and allowing two-way interaction between citizens and the authorities is expected to increase the transparency of government as well as empower citizens to monitor government performance more closely (Thomas, 1998; Markoff, 2000; Raney, 2000; Torres et al., 2005). This proactive role by the authorities i.e. allowing for transparency, as well as providing information will be a strong indication to the public that the government can be trusted.

Overall, providing high quality services and being responsive to the demands of the general public (Wikström, 1996) through managerial quality and administrative performance, high levels of transparency and low levels of corruption will gain the trust and confidence of the citizens of the nation. As discussed earlier in this paper, an increase in the proficiency of services provided by the government goes a long way in increasing the satisfaction of the general public in the government, leading to an increase in trust in the government. In order to further increase service quality, knowledgeable and professional staff are required, and this can be achieved through good person-job fit (P-J) as well as person-organization (P-O) fit. Good P-J and P-O fit can also help in increasing the knowledge base of the organization through better knowledge management (KM). As mentioned by Gloet (2006), commitment to sustainable development requires not only appropriate infrastructure and the management of uncertainty and risk, but also enlightenment within the organization. Therefore, it is important that the government hires the right kind of people for the right kind of job, as this will help in improving the services offered by the authorities to the general public as well as increase the overall knowledge base of the government. P-J and P-O fit, which fall under employee fit, are discussed in more detail below.

Employee Fit

There is a shift in the way organizations choose their employees from the traditional KSA (knowledge, skills and ability) to suit the job, towards organizations selecting employees whose work values is compatible with the organization's culture, norms and values (Morley, 2007). According to various authors, P-J fit is the compatibility between a person's characteristics and that of the job that is performed at work, while P-O fit is the compatibility between the person and the entire organization, whereby one entity will provide what the other needs or at least share similar fundamental characteristics (Kristof, 1996; Sekiguchi, 2007). Westerman and Vanka (2005) add that P-O fit is based on the assumption that the attitudes and behaviours and other individual outcomes result from the relationship between the person and the work environment.¹ The compatibility of the person to the job, organization or the environment is important in making the employee feel comfortable in the workplace, and at the same time encouraging the employee to be willing to contribute and be committed to the organization. Werbel and DeMarie (2005) mention that a good P-J and P-O fit emphasizes the importance of compatibility between the employee and work, as well as creating an organizational identity through the formalization of values that exist in the organization's culture. Furthermore, the type of people that are attracted to the organization, selected and hired, will affect the psychological contract between the employees and the organization (Sekiguchi, 2007). The psychological contract is the tacit exchange between the employee and the organization in terms of the nature of work that is being done by the employee. This contract can affect the knowledge sharing capabilities within the organization as it can either encourage or discourage the employee to share information with their peers (Finnegan and Willcocks, 2006). The P-J fit would therefore determine what kinds of employees are required within the organization, depending on the role that the incumbent has to play within the workplace (Sekiguchi, 2007). This is helpful as the organization could then make sure that they are hiring the right kind of people for the organization to make it more successful in providing better service for the customers. In the case of this paper, it would be the government that is attracting the right employees, so that they may provide quality service to the general public to increase citizen satisfaction, which will in turn help to increase trust in government.

In accordance with good P-J and P-O fit, values in the workplace are becoming increasingly more important as this would be the factor that attracts people to apply for jobs in the organizations if people think that the company's values are in line with their personal values (Morley, 2007). Potential employees would explore and develop perceptions of fit with the organization during the recruitment and selection process to see if there is congruence between their values and that of the organization. Employees would even choose to select themselves out of the recruitment process if they feel that there is a misfit with the organization (Morley, 2007) and this could be a loss to the organization if they are trying to attract skilled and knowledgeable staff. Therefore, if the government wishes to provide quality service to the citizens, it

¹ An issue that is discussed along with P-J and P-O fit is person environment fit (P-E) which is the compatibility of the person with the various systems that exist in the work environment (Kristof-Brown et al., 2002). However, this issue is not discussed further in this paper.

would need professional staff and to attract such staff, the authorities would need to make sure that the values that exist within the workplace are considered attractive to the working market. In today's world, hiring and managing a diverse workforce is an important factor to an organization gaining an advantage over their competitors (Sekiguchi, 2007), and in the government's case, the other competitors are other potential employers of skilled and knowledgeable staff. Therefore as discussed above, ensuring that there is a match between personal and organizational value is important in obtaining and retaining good quality staff.

In addition, a fundamental research by Kristof-Brown et al. (2005) discovered that there is a strong correlation between P-O fit with job satisfaction. Furthermore, there was an equally strong correlation with organizational commitment whereas there was only a moderate correlation with the intention to quit. The relationship with P-O fit and attitudes include satisfaction with colleagues, supervisors and trust in management. This indicates that P-O fit is crucial in managing the satisfaction of the employees in terms of whom they work for, whom they work with, their job scope and increasing their commitment to the organization. Moreover, if job satisfaction increases, the intention to leave the organization also decreases which means that if the government employees are happy with the workplace, they will continue to stay within the organization and continue contributing to it rather than looking for employment elsewhere (Wheeler et al., 2005). "A high level of PO fit is supposed to contribute to a good long-term relationship between employees and the organizations because the congruence and similarity of goals and values increase the mutual understanding and trust between the two parties" (Sekiguchi, 2007, p.121). Employees who chose to stay would ensure continuity in the services offered to the general public as well as be committed to constantly improve the services provided, consequently, increasing customer satisfaction. The knowledge base of the government organization would also be retained and used to contribute towards the betterment of the country instead of being transferred to a private organization.

The discussion above has indicated the importance of P-J and P-O in keeping employees satisfied in order to retain them. Now, the crucial issue is to determine the weights of P-J and P-O in hiring the employees. As it is now quite common for organizations to hire different types of employees, as for example full-time employees, professionals as well as contingent employees, organizations should use different weights of P-J and P-O fit during the selection criteria for the different employees as "the effect of each type of fit on various employee and organizational outcomes may differ according to the type of employees or employment relationships" (Sekiguchi, 2007, p. 120). When selecting employees for general work that can be applied in other organizations, P-J fit would be more important than P-O fit. As employees with common skills, knowledge and abilities (KSAs) are more likely to leave than those with firm specific knowledge, P-O fit is more important when the employees selected are compatible with the organization (Sekiguchi, 2007). In this case, a high PJ fit is required in hiring professionals, whereas a high PO fit is required for administrators in an organization (Sekiguchi, 2007) as the values of the administrators should be in line with the values of the organization. Even if the P-O fit level is not very high, the government could structure the job of the professionals so that they can utilize their professional knowledge through perhaps the creation of independent departments (Sekiguchi, 2007), as for example the legal unit or finance division of their respective ministries, which would help to enhance the P-J fit. As stated above, improving the P-J fit would increase the satisfaction of the employees as they are doing what they are qualified at.

Although it is easy to propose that the government places special emphasis on P-J and P-O fit, there are a few challenges that need to be overcome. First of all, the available pool of job applicants might not be sufficiently large enough so that the government might not be able to find employees who are both high in P-J and P-O fit. The government might be able to find an employee who is high in one factor but not in the other. Also, the government would be wasting considerable time, money and effort attracting, searching, selecting and hiring employees that would have a high fit in both. Therefore, it would be prudent for the government to weigh a particular fit more than the other (Sekiguchi, 2007) based upon the job role that the employee would undertake. As mentioned above, those with a high P-J fit would be more

suitable for a professional job as they can contribute directly to the job in question, while those with a high P-O fit would be better as administrators where their contributions will be in line with the overall culture and values of the organization. In hiring employees that have suitable fit in the job and the organization, they would be more inclined to not only contribute towards the organization, but also be more willing to learn, gain more knowledge as well as share information and knowledge with others, mostly their colleagues. However, the knowledge base of the organization cannot exist such as it is; there has to be controlled management of knowledge within the organization so that it can be utilized effectively and efficiently. With an increase in the knowledge base, the government organizations could very well offer better services to the citizens which would help to increase their satisfaction with the government. Thus, this paper promulgates knowledge management which is discussed below.

Knowledge Management (KM)

One of the main assets of an organization is the knowledge of the employees and it is vital not only that the employees are willing to stay within the organization so that the knowledge is retained, but that the employees are also willing to contribute to the knowledge base. Knowledge comes as a person uses information and combines it with their personal experiences. Much of an individual's knowledge has its own value, and it is that which makes each employee unique and valuable to organizations and society as a whole (Syed-Ikhsan and Rowland, 2004). According to Harrison and Leitch (2000) and Puddy et al. (2001), national governments and international agencies are increasingly recognizing that the emergence of knowledge-based economies has profound implications for the determinants of growth, the organization's production and its effect on employment and skill requirements, and may call for new orientations in industry-related policies. This is possibly because people are beginning to recognize the importance of knowledge within their organization, and "since all companies use and sell knowledge in some form or another, knowledge management is a crucial component of corporate strategies" (Wikström and Normann, 1994, p. 71). Similarly, this applies to governments as governments are the principal users of knowledge since their establishment. At the government level, knowledge management (KM) may be defined as managing knowledge in order to improve internal processes and formulate sound policies and procedures for efficient public service delivery for increased productivity (Misra, 2007). As knowledge transfer, capture and dissemination and organizational knowledge are considered as key elements of knowledge and KM (McAdam and Reid, 2000), therefore, the government would have to be determined to acquire, create, develop and share new knowledge among its own employees in order to improve the knowledge already available in the organization (Labich and Graves, 1993; Maccoby, 1996; Stewart and Curry, 1997). If there is good P-J and P-O fit within the organization, managing the knowledge of these employees would be easier as they would be more willing to participate in the KM processes within the organization.

The need to manage the knowledge within the government stems from the recent changes in the economic sector. A global economic revolution from the industrial to the information age has forced organizations to re-evaluate their corporate strategies and customs. This economic change is not only creating more challenges within the organizations to try and utilize the knowledge of their employees more productively (Nhira, 2001), but organizations are also pressured into changing their corporate strategies to encourage this utilization in order to remain competitive (Labich and Graves, 1993). Competitive advantage in today's global, rapidly changing market requires organizations to build and continually replenish capabilities (MacDougall and Hurst, 2005), at both the individual and organizational level, to work effectively with uncertainty. This is particularly important if the general public is constantly demanding improvement in the quality of service they receive. Therefore, according to Harrison and Leitch (2000), in order to survive and grow in an ever-changing world, organizations would have to adapt faster and faster or else they could be naturally weeded out in the economic evolutionary process. A review of the largest companies in the United States reveals that there is an average organizational life expectancy of forty years, and those who exceed this 'natural' life-span do so by re-inventing themselves and changing their principal activities (Grugulis, 1999). However, the public administration sector seems to be lagging behind in the deployment of KM (Yao et al., 2007). This is because, even though some public sector

organizations have KM, it is only implemented for providing services rather than gaining financial profit (Syed-Ikhsan and Rowland, 2004). Although making profit is not a primary purpose of the government sector, income still needs to be generated to continue financing the much needed services. Therefore, the government would have to learn to adapt according to the needs of the general public. This can be achieved by maintaining a good P-J and P-O fit so that the employees hired are constantly learning as well as adapting to the changes in the environment. At the same time, the business strategy of the organization has to be closely aligned with the knowledge available in the organization. Through this, the authorities would be able to monitor the knowledge available within the organization to cater to the services offered. In addition, the decline of the machine age and the emergence of an information age have made the traditional assets of a company secondary in nature as they can be obtained easily, provided there is knowledge. Therefore, knowledge has now become a utility as a means to obtain social and economic results (Drucker, 1993). In today's information society, organizations reveal the most opportunities, and ultimately, utilize the most value from intellectual rather than physical assets. In order to do that, KM practitioners maintain that knowledge must be shared and serve as the foundation for collaboration (Danskin et al., 2005). Furthermore, success for organizations rests on "knowing how to locate and juxtapose critical pieces of information, and how to organize understanding into forms that others will understand" (Quah, 1997, p. 4). Basically, KM assists the government in efficiently utilizing knowledge already available within the organization (Herschel and Jones, 2005) as well as co-ordinate information and the workflow of the employees (Darroch, 2005).

The above discussion indicates that knowledge is believed to be the new source of competitive advantage for businesses in the future as power belongs to the people with knowledge and information (Yeoh, 1998) as well to those who know how to manage it. This competitive advantage is similarly true in the public sector. However, before the power of knowledge and information can be managed in order to remain competitive, the government must be aware of what kind of knowledge is necessary within the organizations in order to manage the knowledge as well as create better P-J and P-O fit. Different units of the public service need different types of knowledge and it is important that the government is aware of the kind of knowledge their employees are capable of producing (Fu et al., 2006b). This is especially important when an organization is a complex but systematic world where people of diverse professional relationships and goals, differing capabilities, understandings and worldviews exist and work together (Sbarcea, 2001). Therefore, the government organizations have to create the right conditions to build this knowledge capability and design an effective KM process.

A KM process may be possible if the government organizations work together with their employees to achieve their goals. The authorities could assist the employees in discovering which job would be most suitable for them or, in the case of the professionals, try to restructure the jobs. In order for the organization to function as a team, there is therefore, a vital need to promote the effective creation, sharing and retention of knowledge through KM. The organizational activities will then be viewed as knowledge generating, subsequently transforming the organization into a learning organization that shares, adapts and retains their knowledge (Parikh, 2001). Although a KM process will never replace the value of a twenty year veteran, it can help to mitigate the loss of critical knowledge, methods and best practices and intellectual capital if that person is to leave the organization (Robb, 2003). Furthermore, since knowledge intensive firms, such as governments, are typically engaged in complex and difficult tasks that cannot be perfectly converted into standardized work procedures and regulations, they are forced to attract and retain qualified people, who can adapt their repositories to meet the demands of the task (Alvesson et al., 2001). As the primary function of government is decision-making, they have among the largest repositories of information and databases which could help them in making decisions that would benefit the growth of the country (Misra, 2007). However, these repositories would not be helpful if the organizations do not know how to utilize the knowledge available or find ways in which to reduce the gap in knowledge. In fact, the miraculous growth in the per capita income in countries in East Asia, as for example Hong Kong (Yao et al., 2007), is largely attributed to closing the knowledge gap of the organization as well as narrowing the gap between the more developed and less developed countries in

knowledge about how to transform inputs into outputs (Stiglitz, 1999). This case is similar to that of Finland² where they have restructured their nation's public administrative system from education right up to the public services to create a more knowledge-intensive economy. Restructuring the government organizations could be an important step in managing the staff and the knowledge capacity within the government as it could streamline the units and make them more efficient in terms of policies, procedures and the services offered (Dann, 1996; van Beveren, 2003).

Efficiency in policies and services offered by the government organizations is just one of the benefits of KM. Other benefits of KM correlate directly to bottom-line savings, while some are more difficult to quantify as these benefits include long-term and short-term benefits (Wiig, 2002). It is mentioned by Syed-Ikhsan and Rowland (2004) that by managing knowledge, the government ministries could gain numerous benefits, especially improved efficiency and better decision making as well as catering to customer needs. Increased business efficiency, especially in the public sector, was considered to be a key benefit of knowledge management (McAdam and Reid, 2000). According to Santosus and Surmacz (2001), an effective KM programme should help a company do one or more of the following:

- Foster innovation by encouraging the free flow of ideas.
- Improve customer service by streamlining response time.
- Boost revenues by getting products and services to market faster.
- Enhance employee retention rates by recognizing the value of employees' knowledge and rewarding them for it.
- Streamline operations and reduce costs by eliminating redundant or unnecessary processes.

Santosus and Surmacz further add that a creative approach to KM could result in improved efficiency, higher productivity and increased revenues in practically any business function (2001). This too applies to government, therefore, it is argued that with efficient KM, the government will see benefits in faster product development, improved decision-making, more skilled employees, and enhanced services that better meet customer needs, which needs to be achieved if we are to try to increase trust in government. Through KM, along with proper implementation of P-J and P-O fit, it is hoped that the benefits gained will lead to an increase in employee contribution through the sharing and retaining of knowledge in the organization.

In order to share and retain knowledge, organizations need to understand that knowledge could be shared and retained in a variety of ways, and accordingly need to employ a wide range of systems and policies to facilitate this process. It was found that in terms of KM tools, the public administrative sector is more dependent than the private sector on people-based approaches, such as forums, informal discussion groups, etc., to disseminate knowledge across the organization (Yao et al., 2007). Among the methods suggested by authors as a means for sharing knowledge is social interaction or networking (Foley, 2001; Puddy et. al., 2001). "Social interaction in an exchange relationship facilitates learning by making it possible to exchange and combine not only codified knowledge, but also tacit knowledge" (Mariotti and Delbridge, 2001). Through social networks, it has been proposed that employees could identify, share and work with corporate knowledge. This method is supported by McKinlay (2002) who says that the prime source of knowledge is the immediate team members of the employees and the key dissemination mechanism is face-to-face exchange. Therefore, organizations should encourage their employees to share best practices with each other through formal discussions, thereby making better use of the knowledge that exists within a firm (van Beveren, 2003). Moreover, by allowing the employees to interact as well as communicate with one another, they are exchanging work experiences as well as customer information that is related to their job spectrum for a more efficient public sector (Mavin and Bryans, 2000; van den Hoof and de Ridder, 2004) and for a better work environment (Malone and Yohe, 2002). The knowledge gained is then used to create new knowledge and convert ideas into valuable products and services through knowledge innovation by the employees. Furthermore, Xu and Walton (2005) suggest that

² Finland As A Knowledge Economy: Elements of Success and Lessons Learned, 2006, World Bank Institute.

organizations gain feedback from customers and utilize that information to improve the services offered, especially in the case of governments that would like to gain approval from their citizens. Through exchanging ideas and knowledge, the employees could identify experts, provide referrals for those seeking answers and create networking among groups (Bertels and Savage, 1999; Lesser and Prusak, 2001; Newell et al., 2003; Yao et al., 2007). If there is good P-J and P-O fit, their knowledge will be focused towards specific areas of work and by sharing knowledge, they can combine their expertise in order to create better and higher quality service for the general public. By creating experts in the organization, the government would not only gain knowledgeable staff, but also retain a large percentage of this knowledge. Some of the methods of retaining knowledge include asking the expert staff to write manuals, keep files on best-practices, train other employees as well as set up formal and informal networks with colleagues. While some governments may see these networks as promoting idle chit-chat, Gonsalves and Zaino (2001) report that Texaco recognizes social networking as a source of knowledge that employees gather through on-the-job experiences and thus store in their heads. This applies to government departments. However this type of interaction should be made optimally conducive rather than hinder productivity. Furthermore, knowledge transfer need not involve complex computer systems; oftentimes, a simple conversation will suffice (McAdam and Reid, 2000; Cappabianca, 2002). In addition, strong alliances and networking with the organization's partners in terms of collaboration can help acquire market specific knowledge and firm-specific knowledge necessary for organizational success (Laycock, 2005; Fu et al., 2006a; Ratten and Suseno, 2006) as well as help reduce the overall cost of managing the organization.

Among the many costs of an organization is paying for overcoming errors or mistakes made by the employees or the organization as a whole. Knowledge sharing can be a means to avoiding mistakes or at least preventing the duplication of errors (McAdam and Reid, 2000; Schulte and Sample, 2006). Hoopes and Postrel (1999) believe that knowledge coupled with co-ordination will be beneficial to companies in reducing the number of glitches. Glitches here are defined as "costly mistakes that could have been avoided if some of the parties involved had understood things that were known by other participants" (Hoopes and Postrel, 1999, pg. 838). KM could help the organization to reduce mistakes from occurring through knowledge sharing and retention and subsequently, decrease customer dissatisfaction. By sharing knowledge, employees will feel confident in their jobs and the level of knowledge shared could help the government organizations in maintaining the high quality of service to the citizens, thus keeping them satisfied. Therefore, organizations must give autonomy for better knowledge sharing and acquisition among employees (Politis, 2003), determine which factors promote or impede the sharing of knowledge within individuals, groups and respective organizations (van den Hoof and de Ridder, 2004), as well as guide and supervise the KM process.

The guidance and supervision of the KM process is important because the development of leadership and management capabilities to support sustainability is particularly crucial within the political environment (Gloet, 2006). State leaders and higher level government officers must not only acknowledge the knowledge, skills and abilities that reside in the organizational members (Komache, 1997) but also manage the knowledge base effectively and efficiently. Therefore, organizations must have knowledge champions to strategize and guide the KM process (Jones et al., 2003), and employees should gain support from top level management for effective KM implementation (Laycock, 2005). Top level officers of the government should also encourage their staff to become more knowledgeable so that the employees would become experts and they would be able to influence and encourage others to be knowledgeable too (Politis, 2003). Therefore, sharing knowledge would be easier with the approval and encouragement of senior government staff as the lack of leadership by upper levels of management to encourage the sharing and retention of knowledge is a factor that has prevented efficient KM (Yao et al., 2007). With a P-J and P-O fit, the employees themselves would know the gap in their knowledge and take efforts to close this gap. With the encouragement of top government officials, employees will contribute more towards their work and perceive their government authorities to be supportive of their work. As referred to before,

when employees perceive their organization to be encouraging their work, they are willing to contribute more towards the organization as well as share information with their colleagues.

To further encourage employees to contribute towards the organization, a technique that the government organizations could use is a bonus plan (Lesser and Prusak, 2001). It involves paying bonuses to departing employees willing to share their knowledge with staff who are replacing them. The process provides an incentive to make outgoing knowledge more visible and this has been used by the Harvard Community Health Plan, a health-maintenance organization in Massachusetts, United States (Lesser and Prusak, 2001). While on the subject of pay plans, Alvesson et al. (2001) and Yao et al. (2007) look at explicit rewards for employees for knowledge sharing and knowledge retention through various means, including financial rewards, more access to information, participating in more knowledge sharing ventures as well as career advancements and job security. There are also subtle rewards that include recognition and personal satisfaction as a means of encouraging employees to share and retain knowledge and information. With good P-J and P-O fit, employees will have a sense of pride in their work as they are the experts in their field and they might not require monetary rewards but recognition instead. If they were asked to share their knowledge with their peers, by giving due recognition for their work, these employees are highly likely to comply with the organizations' wishes and share their knowledge. This is because the practice promotes a sense of pride and of being valued, and therefore workers are more likely to pass along knowledge if they know they will get positive feedback from colleagues (Yao et al., 2007). Therefore, monetary or non-monetary rewards are important for the satisfaction of employees as well as encouraging the KM process within the organization. "A culture that does not foster and reward sharing of knowledge cannot expect technology to solve its knowledge challenges" (Yeoh, 1998. pg. 28).

Even though organizations are supportive of their staff and are offering rewards for their contribution towards the KM process, there are some challenges that the government organizations have to be aware of. Among these challenges would be the lack of trust employees might have in sharing knowledge as they might feel that they are losing power (Hope and Hope, 1997; Truch, 2001; Syed-Ikhsan and Rowland, 2004). Since knowledge is power, the employees might feel that once they share knowledge, they will become replaceable in the organization. Added to that is the difficulty of giving due credit to any one person or team for their knowledge contribution (Hope and Hope, 1997). Therefore, it is vital for effective KM that the behaviour of management reinforces an appropriate culture through deeds and not just words (Truch, 2001) whereby the organization should continuously maintain contributions to the KM process as being advantageous to the individual. Furthermore, other challenges to KM include information overload where employees are overwhelmed with the information that is provided to them as well as the abstract nature of knowledge that is difficult to quantify as an intangible asset (Laycock, 2005). The limited knowledge sharing between departments and knowledge retention in the organization is also another challenge to the employees. Moreover, government organizations tend to be very bureaucratic in nature, making knowledge sharing and retention rather difficult due to all the formalities (Syed-Ikhsan and Rowland, 2004). To a certain extent as well, although financially rewarding employees for sharing knowledge is a noble thing, this could be rather difficult for resource-limited public organizations (Syed-Ikhsan and Rowland, 2004; Yao et al., 2007) that are accountable for their expenditure. In addition, many KM literatures tend to promote the use of IT as a means for managing knowledge (Gloet, 2006). However, IT should only be used as a supporting tool, and cannot be utilized as the sole means of managing knowledge as IT cannot encompass all the attitudes and behaviours of the employees or the general public.

To assist in the attitudinal and behavioural dimension of KM within an organization, human resource management (HRM) plays a large role in achieving an efficient KM process. HRM decisions are part and parcel of the organization's strategic decision-making process (Hendry and Pettigrew, 1990) as they have to make sure that the employees are suitable for the job (P-J fit) and have common values with the organization (P-O fit). Potential employees need to be carefully screened before the selection process, and decisions on whom to hire also need to be made. Although the organization can use KM to build personal expertise (Wiig, 2002), it is HR that will need to identify necessary training procedures for better

efficiency and effectiveness within the organization. It has to be considered that different types of training are needed for different levels of staff. This includes training new staff on government policies, values and relationships with other units of the government as well as training higher levels of government staff on how to set and guide strategy and direction for the government (Butler, 1996). Highly trained and skilled employees will help the government improve its group of experts and enhance its ability to continue providing high quality services (Komache, 1997; Fu et al., 2006a). HRM would also assist in identifying the government's core business, services and resources as well as help to supervise the skills necessary to achieve these goals (Komache, 1997). Furthermore, these skills need to be constantly updated and monitored so that the knowledge obtained from the work experiences can be shared and retained in the organization. In addition to that, HRM is also important in designing remuneration systems that are considered attractive to the potential applicant, as well as to the current employees so that the government organizations will be equally competitive compared to private companies as a choice of employer. Moreover, the remuneration system could also be used to reward employees to share knowledge with their peers to increase the knowledge base of the government organization. Furthermore, part of the rewards system in place could also include more training for the employees. Therefore in the knowledge economy, a primary focus of HRM should be the development of human capital and the management of knowledge as well as integrating individual, team and organizational learning for the benefit of customers, employees and the organization (Gloet, 2006). With highly skilled staff being recruited to the right jobs in the organization via P-J and P-O fit and an increase in the knowledge capacity of the organization, the government would be able to better manage the knowledge existing in the various government units. With the efficient management of knowledge, government organizations will be able to provide desirable services to the general public which will increase their satisfaction.

3. Conclusion

As discussed in this paper, trust in government is important for the development and growth of a nation. Furthermore, there are various factors that lead to trust in government but among the most important one is customer satisfaction. The customers in this case would be the general public. By providing the citizens with quality services, maintaining quick and adequate response to their feedback, implementing effective policies and procedures as well as upholding transparency and low levels of corruption in the government, the perception of a trustworthy government would be enhanced. In order to achieve a perceived trust in government, this paper proposes that the government hires and retains a highly skilled workforce that is compatible to the job and to the organization through P-J and P-O fit so that the employees would feel comfortable in their work environment. Employees who are satisfied with their job and the organization are more likely to be committed as well as contribute more towards their job. By making them experts in their job through good leadership, managerial style as well as encouraging them to gain more knowledge, these employees will be more willing to share their knowledge and expertise with their peers as well as retain the knowledge in the organization. Managing the knowledge of employees and the existing knowledge within the organization is therefore important in making sure that gaps in knowledge are not overlooked and filled, and that mistakes or errors are avoided. Moreover, by utilizing the knowledge efficiently and effectively, the government would be able to offer quality services to its people. Therefore, we can see that by managing the knowledge of the employees that have been selected and hired for the right job and the right position in the organization, a government would provide better services to the people. These improved services would subsequently enhance the people's satisfaction with the services offered and the growth of the nation, which would ultimately lead to an increased trust in government.

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v. Funding and Financial Issues

E-GOVERNMENT FUNDING IN CHINA

Mr. Hongren Zhou

Effective finding for e-government is a big challenge that all governments are facing. For government itself, an effective funding strategy must be developed and implemented. Accordingly, government should carefully design its own funding mechanism. Particularly, funding for e-government should be integrated into the annual budget process of government, not only for its initial development but also for its subsequent funding requirements with respect to operation, maintenance and upgrading of e-government systems. In addition, effective funding strategies should be closely linked with collaboration strategies among the agencies so as to promote cross-agency e-government initiatives.

Government direct funding for e-government remains fundamental at the moment. However, this issue will be relegated to the back seat as e-government projects become more marketable. So it is important to raise the awareness of both the public and private sectors and seek funding from any possible partners. On the one hand, government can accelerate its pace of informatization and provide better services to civil society without spending too much money of taxpayers. On the other hand, the investors can also benefit a lot, from a large market share resulting in substantive increases of revenue.

For the long-term success of any e-government project, it is crucial that sustainable relationships are developed across the public, the private and other sectors, and that collaboration with partner agencies and stakeholders are effectively established. In this regard, China has made significant progress over the past six years which has greatly stimulated China's e-government development.

1. The Development of Government Informatization in China

The beginning of government informatization in China dates back to 1975 and is marked by the establishment of the National Computer Center within the State Planning Commission. In 1983, approved by the State Council, the Office for Management of Economic Information was set up, responsible for the planning and building of the State Economic Management Information System. In the aftermath,, computer centers in 43 ministries and agencies at the central government were established; total investments for the State Economic Management Information Systems (SEMISs) amounted to 20 billions RMB Yuan; 1,391 units of mainframes and mini-computers as well as 60,000 PCs and 30,000 terminals were imported; and 174 databases and 252 various management information systems (MISs) were developed.

The benefits of these informatization efforts were obvious. For example, a national banking clearing system developed by the China People's Bank connected computers in 400 cities via satellite and reduced the time needed for clearing trillion RMB Yuan transactions from 7-10 days to 1-2 days. A three-tier national railway MIS was established within the Ministry of Railways, connecting 12 Bureaus and 57 Sub-Bureaus and networking 87% of locomotive depots and 67% of trainmasters. By 1991, within the central government, 806 databases with different themes were developed, among which 360 (45%) cover the sciences and engineering; 234 (29%) cover education, culture and health; and 167 (21%) cover the economy, finance and fiscal, and commercial themes.

In 1993-1994, in response to the Information Highway Plan of the United States, the National Economic Informatization Joint Meeting was established and chaired by a Vice Premier in order to accelerate the informatization process of China. Three large-scale projects, so called "three Golden Projects" -- Golden (Bank) Cards, Golden Customs, and Golden Bridge project, were launched. Since then, a prefix "Golden" is added to all national government information system projects. In the mid-1995, the Information

Services Network of the State Information Center (SICNET) began to provide daily information services to the government and the public, covering data and information on daily-economic issues, monetary and fiscal issues, macro-economic issues, prices of goods, foreign investments, real estate, international economic issues, etc. Value-added services, such as email, video-conferencing, phone-conferencing, and advertisements are also available.

By 1999, Golden-Customs made a great achievement. A number of sub-systems were established, including a coding system of goods and enterprises, a quota and certificates management system, an import and export statistical system, a management system of tax reimbursement for exports, etc. The customs computer system connects with the bank branches and the Exchange Control Administration, and correspondingly, networked examination and verification of customs declarations were achieved. As a result, various potential frauds were effectively prevented while raising the efficiency of customs business. The Golden-Card project promoted the networking of different banks so that bank cards could be used across different banks. At the beginning, clients could withdraw money from an ATM in 12 cities, and the National Banking Network System could handle more than 50,000 transactions per day, amounting to 80-100 billion RMB Yuan. In the meantime, smart cards began to be used in non-banking businesses, such as public safety, insurance, payroll, transportation, health and medicare.

In 1992, the Office of the State Council started to promote the development of office automation systems at all levels of the Chinese Government. By the year 2000, a national-wide office automation system connecting the government ministries, departments and the governments at different levels was established. In April 1998, the City of QingDao established the first government web site of China. In January 1999, China Telcom, together with more than 40 government agencies, advocated “Government Online Engineering”, the goal being to have 60% of ministries and 80% of local government online in 1999 and 2000, respectively. By May 1999, there were 1,470 domain names registered under gov.cn in China.

In August 2001, the Leading Group of State Informatization, headed by the Premier Zhu RongJI and membered by the heads of the key ministries, was established. At the same time, the State Council Informatization Office was set up as the secretariat of the Leading Group and is responsible for policy, strategy and coordination. The Advisory Committee for State Informatization, consisting of 55 outstanding experts covering economic, social, political, scientific, cultural and engineering themes, was also established as the primary consultation body to the Leading Group. In December 2001, the Leading Group held its first meeting and decided that e-government should be the first priority of the state informatization. Obviously, the intention of the Government is to use e-government to leverage the overall development of informatization in China, particularly in the economic and social spheres, as well as the booming of information industry in China.



Fig. 1. Homepage of the Web site of the Central Government of China

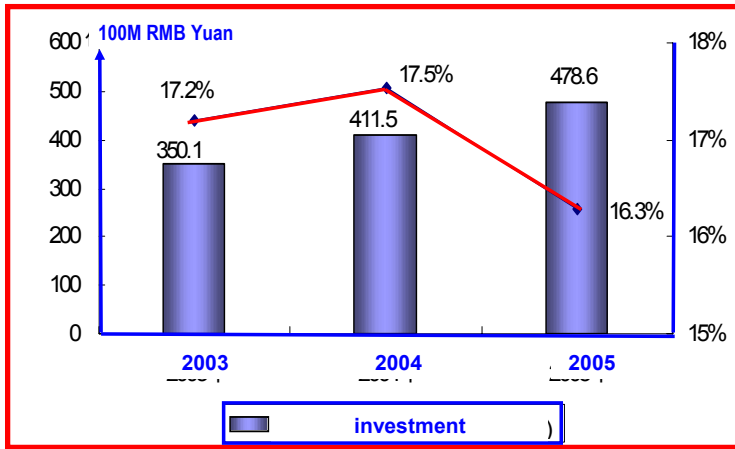
Since then, e-government has been developed at an accelerated speed. The official portal of the Central Government came into operation formally on 1 January 2006 (www.gov.cn, Fig.1). By the end of 2006, the registered Chinese Government domain names (gov.cn) and the government web sites had reached 23,800 and 11,052, respectively. The penetration of the government web sites at the levels of ministry, province, city and county was 96.1%, 96.9%, 97% and 83.1%, respectively. A series of national information systems have played significant role in the normal operation of China's economic and social system. For example, by June of 2005, the national eTaxation system had connected with 25,749 nodes and 18,181 LANs in operation. More than 30-million enterprises and 22-million taxpayers are being managed by the computer systems. For the year 2005, China's revenue increased by 500 billion RMB Yuan compared to 2004. Out of this increase, 300 billion came from the e-taxation system – according to the Taxation Authority. The Portal of Ministry of Commerce has become a window for information publication, a platform for opening government business, a bridge between government and the public, and a gateway for providing public services. Its monthly visitors worldwide surpassed 20 million in 2006. The Online Service Center of the Ministry helps enterprises greatly, e.g. 206,383 contracts for processing trade were approved via the Internet for the first half of 2006; and 24,471 enterprises participated into open tendering for three textile export quotas on the Internet in 2006.

2. Government Funding

Government direct funding is fundamental for a healthy development of e-government in many countries, as it is in China. In fact, a large percentage of funds for e-government come from the Treasury of the Chinese Government. In order to further clarify the funding mechanism, the Office of the State Council, on behalf of the Leading Group of State Informatization of China, issued a government instruction in August 2002, which outlines the main requests for e-government funding including:

- The governments at all levels must ensure the funds available for the development and operation of e-government projects,
- The funds for national e-government systems will be shared by the central government and the local governments involved,
- The construction expenses of e-government projects to be borne by the central government will be charged to the development budget of the central government, which is managed by the State Development and Reform Commission, and the operation expenses for the systems in use will be borne by the Treasury of the central government, which is under the Ministry of Finance.
- The funds for the development and operation of local e-government systems, in principal, should be borne by the relevant local governments. However, for those governments which are grappling with financial difficulties, some financial assistance can be expected.

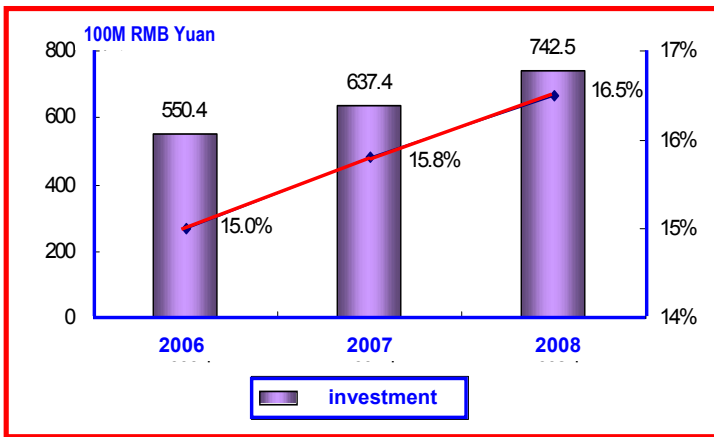
These guidelines play a significant role in promoting e-government development in China. In particular, the third point above is very important and solves a long-pending problem for the normal operation of government information systems. This is because, the case before e-government becomes popular is always like this: there is money for building a government information system but no money for its normal operation and maintenance, needless to say upgrading.



1 US dollar = 7.73 RMB Yuan

Fig. 2. eGovernment Spending in China, 2003-2005

Fig.2. shows the e-government spending of China from 2003 to 2005, provided by CCID Consulting, China. During this period, China's annual expense for e-government development was about US \$5.64 billion, increasing by 17 percent. Fig.3. gives the estimated e-government spending from 2006-2008, which shows that China's e-government spending will continuously increase at a rate of 15%-16% and will reach US\$9.6 billion in 2008 – more than double compared with the data in 2003.



1 US dollar = 7.73 RMB Yuan

Fig. 3. eGovernment Spending in China, 2006-2008 (estimation)

The figures cited above does not take into account the inputs of the government information infrastructure building since, in the most of the cases, governments at all levels are encouraged to use the public telecommunication network and VPN technology instead of building their own infrastructure. By the end of 2006, China's optical fiber cable length was about 4.26 million kilometers, among which 0.72 million kilometers are long-distance optical fiber cable.

3. BOO (Build-Own-Operate) and BOT (Build-Operate-Transfer) Models

In China, the governments attach importance to raising both public and private sector awareness and to seek funding from any possible bodies. The governments' wish is, on the one hand, to use social capital to accelerate e-government development and benefit the people and, on the other hand, to stimulate the development of the information industry in China, particularly, service industry development. In this regard, BOO and BOT models presented below are increasingly being adopted and become useful and effective tools for funding e-government.

The BOO Model

With the build-own-operate model, a private company is granted the right to develop, finance, design, build, own, operate, and maintain e-government projects. The private sector partner owns the project outright and retains the operating revenue risk and all of the surplus operating revenue in perpetuity. While this approach is more common in power supply, civil engineering and telecommunications, it has also been used to develop government informatization projects as well.

Capital Information Development Corporation Ltd. (CIDC), an IT company in Beijing, China, has developed a cooperation model with governments, i.e., so called BBO model. Under this model, the company invests and undertakes design, system development, operation, maintenance, training, etc. of an information system engineering, and will own the property right of all the hardware, software and other assets to be invested into the system, while government will be responsible for environment cultivation, agency coordination, user requests clarification and confirmation, and an annual payment to the company for the use of the hardware, the software, the system and the services. Thus the government can also ensure the system's vision and its compliance with the legal requirement. Taking advantage of this model, CIDC has built the Beijing Public Platform Network for the Beijing Municipal Government and has developed and kept upgrading all the application systems based on the network, including the Portal of the Beijing Municipal Government ("The Window of Beijing") and the services provided to the public. CIDC has cooperated with the Beijing Municipal Government for years and both are very satisfied with this type of cooperation model.

In July 2002, CIDC also signed an agreement with the Municipal Government of YingKou, a city in LiaoNing Province of Northeastern China. According to the agreement, CIDC enjoys the franchise right and takes the overall responsibility for this city's important information application systems, including overall planning, design, construction, operation, maintenance, management, and funding. In July 2003, a video conference of experts on appraisal and evaluation of "The YingKou Informatization Development Plan" and "The Overall Scheme of YingKou e-government Design" was held at Beijing and YingKou at the same time. The cooperation between CIDC and the YingKou government gives a good opportunity for CIDC to use its experiences and mature technologies outside Beijing, which has no doubt not only saved the investment of CIDC in the projects of YingKou, but also saved the expenses of the YingKou Government and accelerated the pace of e-government development in YingKou. Therefore, it is a win-win situation, indeed. In addition, CIDC has developed a joint venture as well with a local company in YingKou to implement, operate and maintain the information systems developed. It goes without saying that this act also stimulates local capacity building of informatization and e-government.

BOT Model

More and more governments are turning to the Build-Operate-Transfer (BOT) model to accomplish the expensive and enormously challenging task — allowing private developers to design, finance, construct, and operate revenue-producing public projects, and then turn them over to the community at the end of an agreed payback period. In China, the BOT model has also become very popular in e-government development.

The Labour and Social Security Bureau, QingHai Province -- a remote and a less developed region in North-Western of China, adopted the BOT model to build its Information Network for Labour and Social Security. QingHua TongFang Corporation Ltd., a well-known company set up by QingHua University of China, takes the contract and is responsible for funding and investment, system development, operation and maintenance, and owns the property right of the assets invested. With this contract, the Labour and Social Security Bureau of QingHai provides policy guidance, right protection, and data and information resources. QingHua TongFang Corporation Ltd. has its capital recovery from selling social security cards, advertisements, and the charges for social security services. The property right of the recovery portions is then transferred to the Labour and Social Security Bureau of QingHai Province. This project with a total investment of 80 million RMB Yuan took off in November 2003 and was accomplished in three years.

In July 2004, a “Forum on Accelerating e-government Development in North-Eastern China by Means of BOT” was held in the city of DaLian, LiaoNing Province. At the Forum, TaiFu Digital Corporation Ltd. and the Bureau of Information Industry of the DaLian Municipal Government signed a BOT agreement of e-government, which symbolizes the use of BOT model in the North-Eastern part of China. Since then, more and more governments in LiaoNing Province have used the BOT model to accelerate their e-government development.

Both the BOO and BOT models materialize socialization of investment and operation of e-government. It is good for governments, in particular, for those short of capital and in less developed areas, because it reduces the government’s burden, while promoting the development of government informatization. The BOO and BOT models also reduce the risks to be undertaken by government in its e-government development. It is good for the society as well because a variety of enterprises relating to e-government products, such as hardware sales, software development, and system integration can compete and find their own opportunities for development. Accordingly, the BOO and BOT models stimulate the booming of the local information industry. Comparing with the BOT model, obviously, the BOO model still requests government to pay for the use of the systems and the services.

4. Public Private Partnership (PPP)

For the long-term success of any e-government project, it is crucial that sustainable relationships are developed across the public, private and other sectors. Links with ICT companies and central or local government agencies are important for the development of technical infrastructures, systems and services. Relationships with other associated organizations for the distribution of government services are also the keys to succeed.

In order to provide an integrated one-stop public services portal to the enterprises and the citizens, the City of HengShui in HeBei Province, built a “Centre for Administrative Services”, which concentrates 150 government staff and networks and more than 40 governmental agencies, and deals with 550 items of administrative approvals, and 180 items of administrative fee charges. In addition, the Center accepts and hears complains and appeals, and provides government information services.

In the construction of the Centre – a building of 5,600 square meters, the expense of the building and offices fitment was loaned by a local bank and refunded by the monthly inputs from the service charges provided to the public. The costs of the hardware, software, as well as the system development, operation and maintenance were borne by China Netcom — a telecommunication company, with a mutual understanding that the HengShui Municipal Government must hire its circuits. In another words, this is a deal of bartering government resource for market share. The successful implementation of this PPP model shows that the development of e-government in a less developed area is not only possible but also implementable without larger input of government finance

It is true that governments can barter their own scarce resources for capital needed. Accordingly, governments need to recognize and rationally manage and operate their resources so as to benefit from these resources to the extent possible. In this sense, government officers should have business acumen to take advantage of these resources. For example, an Internet portal of a local government is an important government resource and can be contracted to a company for building it without any government input to it. Many IT companies would like to do so because they can transfer the authority of government to their own credit and win a larger market share.

However, not all of government businesses are profitable. Therefore, sometimes it is hardly possible or it takes a long time for companies to have returns on investment, or in other situations profits from an e-government project may be far less than its investment. In such cases, some of government direct investment is inevitable.

In HeiLongJiang Province of China, 26 cities and counties have completed the construction of their e-government platforms and the development of various application systems, including information infrastructure, local area networks, web sites, portals, and office automation. In addition, another 17 counties have accomplished funding of e-government and are ready for launching their e-government projects. The market principle is widely adopted by these local governments, and the funding sources of e-government include government financial, telecommunication companies, and IT companies.

5. Collaboration with a Telecommunications Company

The telecommunications sector in China has been developed at a very fast pace over the past 20-30 years and has become one of the most profitable and “rich” sectors in China. In the year 2006, its annual turnover achieved more than US\$200 billion and created revenue of approximately US\$100 billion. Comparing with the year 2005, the percentage increases of the annual turnover and the revenue are 24.6% and 10.6%, respectively. Currently, the telecommunications companies in China are very keen to invest into the informatization and e-government projects of China for not only more profits but also in the effort to gain a larger market shares. In this regard, there is strong competition among the Chinese telecommunication companies, which is definitely in favor of the development of e-government. In fact, the telecommunication sector has played an increasingly important role in China’s informatization and e-government, in terms of not only the information infrastructure building but also, more importantly, the value-added services.

In a number of provinces of China, the telecommunications companies are more and more involved in informatization and e-government, from infrastructure building to funding e-government projects. In Jilin Province of North-Eastern China, with the financial support and technical assistance of the China Netcom, the Bureau of Agriculture of the Provincial Government has developed an “Agricultural Information and Knowledge Service System” to provide hotline services to the farmers on production and trading, particularly those in the remote areas. Besides accessing to the Internet portal of the system to obtain the various information services, another channel to access the services is to directly talk with more than 400 agricultural experts covering various subjects, who are selected from the universities and the research institutes, and equipped with cellular phones and committed to turning it on 24 hours a day. A call centre with 12 experts of the 400 on duty everyday is established within the office building of the China Netcom. Whenever farmers have any questions on agricultural information and knowledge, they can dial the number “12316” from anywhere, by means of either telephone or cellular phone, to reach the call center and put forward their questions. In case the expert on duty is not able to answer a farmer’s question, one of the 400 experts will be informed and connected to deal with the question. During the development of the system, the China Netcom invests 20 million RMB Yuan for both the necessary infrastructure and the information system, provides the offices and facilities of the call center, and pays for the experts either on duty or answering questions according the services they provided. The Bureau of Agriculture is responsible for the contents of the system, the selection of the experts, the terminals to be provided to the

farmers, and the operation and management of the system. The farmers only need to pay the charges for the calls they made, which are much lower than the toll of general voice calls. For example, the monthly charge would be 3 RMB Yuan or about US \$0.40. Obviously, the benefit to the telecommunications company is a larger market share because the farmers will still use their lines for any other purposes. Nine months after its establishment, the system has begun to have positive money flow, i.e., the China Netcom has begun to make profits. The Bureau of Agriculture has extended the services to many other areas that the farmers need, such as “what the weather will be like the day after tomorrow”, “what is the illness of my daughter”, “what medicine should I take”, “what is wrong with the pigs I feed”, and so forth. Hence, the network provides not only agricultural information services but also every question that the farmers want to have an answer to. Obviously, more questions mean more calls, and, accordingly, imply more uses of the telecommunication infrastructure, and more revenues of the China Netcom.

It is true that the concept of “universal service” that allows people in remote areas access to the information facility is important. In many parts of the world, telecommunication companies have made tremendous efforts to have an information infrastructure available to the people. However, they find that no one is interested in using it and it is almost impossible to get their investment back. Fortunately, this is not the case of the China Netcom because it binds the information infrastructure and the information services in one basket and has accomplished real “universal services”. Now, the number “12316” has been very popular in JiLin province. For many farmers, they may not know how to use the Internet but they can easily dial this number and get services they want.

Such a collaboration model between governments and telecommunication companies has been accepted in some other provinces in China, and has attracted more investments for improving the information infrastructure and government information services. For example, broadband telecommunication networks using optical fibers have been extended to many villages in HeNan and ShanXi Provinces of China. The ShanXi Mobile, a mobile telecommunications company in ShanXi Province, has extended its fiber optical cable to many villages so that farmers can take advantage of its optical fiber network to enjoy broadband services, including VoIP, Cable TV, as well as access to the Internet.

In cooperation with the Ministry of Agriculture, the Chinese Academy of Agriculture, the China University of Agriculture, the Farmer’s Daily, the China Mobile -- the largest mobile telecommunications company in China, has established a national agricultural information platform to provide information services to the farmers nationwide on relevant agricultural information and knowledge, including production, the market, weather, labours, seeds and fertilizers, plant diseases and insect pests, etc. Farmers can access the system via a cellular phone, a farmer specified information terminal, a computer terminal, dialling the number “12582”, or using voice or a short message. By October 2006, 12.67 million farmers had become frequent users of the system.

E-GOVERNMENT, GOOD GOVERNANCE AND KNOWLEDGE MANAGEMENT

Dr. Jeffrey Roy

1. Introduction

By way of critically examining the nexus between electronic government (e-government), service transformation and knowledge management, this paper explores the potential for better public sector governance and strengthened levels of relational trust between citizens and governments. Within such a context a specific objective of this paper is to examine strategies and mechanisms for knowledge management and how they are financed in terms of both upfront infrastructure investments and the return on such investment through improved performance capacities and results.

The three central terms introduced in the preceding paragraph merit some definitional scope (even as each one is defined numerous ways in relevant research literatures). Service transformation and knowledge management will thus be defined more precisely in the subsequent sections, but as a starting point here the term e-government may be defined as: the continuous innovation in the delivery of services, citizen participation, and governance through the transformation of external and internal relationships by the use of information technology, especially the Internet (Roy, 2005/2006a). It is important to note that this definition encompasses innovation in service delivery processes and citizen participation processes – both predicated on relational transformation. This paper will dissect this transformational potential as a knowledge management challenge, one intricately interwoven with the impacts of new information technology (and thus broader questions of e-government).

Although knowledge management (KM) is not purely -- nor even primarily, a matter of technology, the increasingly digital environment within which the public sector must operate and adapt, is central to the financing of KM strategies and mechanisms. Large scale information technology projects are often costly and notoriously difficult to implement and manage (OECD 2001). Measuring their payback in terms of direct and indirect impacts on results can be equally complex (Reed 2004; Eggers 2005). A basic premise of this paper, then, is that KM must be properly understood and situated as an enabler of improved governance (often referred to today as ‘transformation’) before matters of financing and cost and benefit flows can be appropriately addressed.

The paper proceeds as follows. Section two defines and further dissects the service transformation challenge of the twenty-first century including both the business architecture of government service delivery on the one hand and the political architecture of democratic accountability and public participation on the other hand (as well as tensions between them). Section three then situates KM as a critical enabler of these different types of transformation, one closely associated with an emphasis on customer and citizen relationship management (again, recognizing tensions between these terms). Section four probes the financing of KM initiatives and determinations of return on investment – internally to government, via the usage of public-private partnerships, and across a collective governance system for a learning society as a whole. By way of conclusion, section five summarizes the main lines of argumentation from this paper and the consequences for public trust.

2. Service Transformation

In recent years, governments at all levels have begun initiating major public service delivery transformations. The most significant of these transformations: involve the integration and rationalization of services across traditional agency and jurisdictional boundaries; are citizen-centred and feature multi-channel delivery with a particular emphasis on online delivery; and make use of public-private partnerships to design and deploy the tools and processes necessary to realize these integrated and citizen-centred outcomes. Within this transformative lens, three sets of objectives have been well summarized by

Remmen (2003) in the following manner: i) efficiency -- cost reductions; ii) service -- better quality, easier access (i.e. 24/7), new services; and iii) democracy -- participation and interactive dialogue.

In terms of the first and second sets of objectives, efficiency and service, the private sector is an important reference point (Andal-Ancion, Cartwright and Yip, 2003) as the business architecture of costs and customer service, coupled with the lure of electronic channels are relevant for both businesses and governments (Cairncross, 2002). At the same time differences are evident: efficiency, for example, is often a more politically contested principle in government as stakeholders such as unions and political parties may oppose worker mobility and job cuts -- moves generally applauded in the marketplace. Equally important, whereas private corporations may aggressively select and cater to chosen clients, broader public interest responsibilities involving all citizens shape both the feasibility and perceived appropriateness of a public sector service strategy.

For example, whether or not the 'citizenry' (in political terms that often emphasize equality and uniform treatment) can and should be parcelled on the basis of 'customer' or 'client' segmentation (in business terms where different groups are catered to in different ways) is an interesting question (Dutil, Howard, Langford and Roy, 2007). In many jurisdictions, the customer-centric determinism of e-government and more recent variants of service transformation would seem to suggest an affirmative response on the part of many government strategists, or rather that the matter has simply not been given much thought (*ibid.*). In Canada, for example, the widening cleavage between service and democratic performance is evident, with one school of research thought championing the view that strong service capacities by government can facilitate higher levels of public trust (Heintzman and Marson, 2005). The very real implications of such semantics in terms of the potential transformation of external relationships between the public and governmental organizations carry important implications for KM, a point returned to in the next section and beyond.

With respect to the internal relational transformation of the public sector, a traditional reliance on hierarchy and bureaucracy – often viewed as more virtuous in government than in industry, renders service transformation as something of a clash between systemic coordination for integrated services and silos of separate, specialized functions. As such, a difficult transition for government lies in achieving the sorts of internal mechanisms for integration and coordination required across the public sector in order to enable more integrative, citizen-centric governance (Fountain, 2001; Allen et al, 2005). In an online world, portals accentuate this clash – with governments themselves often championing an integrationist, single point of access view.

Achieving this horizontal collaboration therefore requires political will and a set of organizational mechanisms to facilitate information sharing and joint action (Batini et al, 2002; Bellamy, Perri and Raab, 2005; Lindquist, 2005). The danger is that in the absence of strong action to overcome the boundaries engrained within traditional organizational structures, predicated for the most part of separate, vertical silo like functions, then the rhetoric of portals as a basis for integrative services, one stop encounters and more seamless governance remains just rhetoric (Charih and Robert, 2004; Allen et al., 2005). Again in an online environment integrative mechanisms become reduced to a mere set of web-links that direct citizens and organizations from one branch of government to another.

The resulting challenge of horizontal coordination is closely intertwined with the principle of interoperability, a central characteristic of governance reforms tied to the enabling of government-wide systems for information sharing and collective action across organizational boundaries. Although at one time viewed predominantly as a technical challenge, where the absence of inter-operability would be reflected in the disconnect between various hardware components and software programs in separate departments not being able to work with one another (often due to the fact that each department designed their information systems to work for their own unique purpose with little incentive to be concerned about cross-governmental approaches), this principle must now be viewed as an important element of

organizational design in the digital age. The resulting quandary is whether interoperability can be facilitated by collaboration between units or rather through more centralized mechanisms mandated with the task of ensuring government-wide capacities are in place (Coe 2004; Culbertson 2005).

There may well be sound reasoning for governments taking a more cautious and gradual approach than their private sector counterparts, much of it security-related. The political risks of security breaches in the state settings are often perceived to be far more serious than proportionally similar risks in the private sector context, a comparison most often attributed to the significantly greater holdings of personal and sensitive information held by the public sector (Joshi, Ghafoor and Aref, 2002; Holden 2004). This relationship is complex and dependent to a significant degree on the level of trust accorded to the public sector by the citizenry. In jurisdictions where trust is high, technical solutions are more readily supported and the organizational changes required for more innovative and integrated forms of service are more feasible (Wilson and Welch 2004; Roy 2006b). The converse is true as well – where lower levels of confidence and trust translate into stronger vices for both organizational resistance and technical cautiousness (ibid.).

In terms of a reliable and interoperable infrastructure, information sharing opens up new opportunities for policy coordination and service integration. In theory, it becomes possible for an individual or a company to expect (or endorse) that information provided through one public sector gateway (i.e. a service renewal or transaction completion) should be readily available across the public sector for any other usages that may arise, be they related or unrelated to the initial encounter (Kearns 2004; Bellamy, Perri and Raab, 2005). In doing so, the validation and usage of this single identity is shared government-wide. While the potential for ‘value’ creation is real (Kearns 2004), so too are the risks associated with an ‘identity’ tied to more and more information flows that, in turn, must be stored and shared (Joshi, Ghafoor and Aref, 2002; Lips, Taylor and Organ, 2006). In a networked world, each mechanism for identify verification leads to another possible opening for breaches: “Any party looking to subvert data will seek data or systems at the lowest level of protection and then use the data for authorization to subvert the security surrounding high value users” (p.6, Digital Government Civic Scenario Workshop Report 2004).

As a result, the explosive growth of the Internet’s first decade has moderated, and security and privacy concerns are important factors in the trepidation of many to move online (Bryant and Colledge, 2002; Hart-Teeter, 2003). A 2005 Ipsos Group survey in the United States reported that the percentage of Americans banking online stalled at 39%, with nearly three-quarters of those shunning online channels invoking concerns about personal privacy and the secure storage and processing of their financial information. Paradoxically, many surveys in the US and Canada demonstrate that banking institutions are by far and away the most trusted organizations for personal credentials and processing personal information online (Roy, 2007b). In Statistics Canada’s 2005 Internet Use Survey, 75 percent of respondents expressed concern about privacy and security online. A major challenge is the lack of consensus that is inherently normal in any democratic-minded, capitalist society as what constitutes an appropriate level of privacy. From a service perspective, trade-offs between privacy and convenience seem unavoidable, as to those privacy and surveillance in light of threats to collective security (Bellamy, Perri and Raab, 2005; Coleman and Norris 2005).

The parameters of the debate have also shifted politically as digital tools may also be viewed less as means toward convenience and efficiency and more toward matters of security (Strickland and Hunt, 2005; Roy, 2005/2006b). Many governments are now pursuing bolstered forms of identity management through technologically sophisticated devices for authentication such as national identification cards and biometrically enabled passports (Meyers, 2003). Radio frequency identification devices (RFID) are viewed as an area of particular interest for a developing a more secure infrastructure for commercial transactions, transportation and human mobility and verification schemes (Hodges and McFarlane, 2004). Such sentiment – coupled with fears of terrorism, may also yield a supportive environment for widened surveillance activity on the part of public sector authorities (Whitaker, 1999; O’Harrow, 2004). For

surveillance and security as well as service, identity and information management is central (Coleman and Norris 2005; Roy, 2006b).

In sum, service transformation has arguably emerged as the centrepiece of e-government (as defined at the outset of this article) in terms of shifting internal relationships (interoperability and integrated service capacities) and external relationships (interfacing with the public via innovative service outcomes while safeguarding personal information flows). Important questions and tensions remain about the degree to which a business stylized and 'customer'-centric logic are fully appropriate for more democratic interfaces based on citizen engagement and participation (and the resulting impacts for the public's trust in government). These questions and tensions directly underpin the KM challenge that lies at the heart of the public sector's capacity for responsiveness, resilience learning in light of these multiple relational forms.

3. Knowledge Management - From Customer Information to Collective Intelligence

Much of the previous section's dissection of service transformation entails a series of governance challenges that all rely on properly capturing, sharing and coordinating information flows (both within and outside of the public sector). Indeed, information is the lifeblood of citizen-centric strategy – in so far as users of government services are empowered to choose between multiple delivery channels enjoined by an infrastructure of people and processes to facilitate a single point of access and integrated outcomes.

What, then, is the distinction between 'information management' (IM) and 'knowledge management' (KM)? Whereas the former term generally emphasizes the governance architecture of structures, policies and electronic or digital systems, the latter term denotes the processing of information through the usage of such architectures in order to facilitate better outcomes. These better outcomes are often premised on the role of people making use of both formal information flows (as the basis of codified knowledge) and less formal, more implicit or intangible insights and behaviours that often serve as a basis for tacit knowledge. In both cases, knowledge is regarded as a higher-order ingredient in personal and organizational performance since there is thought to be some value-added as it is derived from more abundant and potentially scattered information flows that may or may not carry strategic significance until recognized and harnessed. Some thus define KM as 'information in action' (MacDonald and MacDonald, 2003).

As a strategic nexus between people, organizational and cognitive processes, and (increasingly digital) technologies, KM's parameters can be fluid and even elusive in terms of precise mechanisms and systems that one can identify separately from a variety of other organizational initiatives, notably human resource management, ethics and leadership, and modern comptrollership (as KM arguably permeates them all). This challenge of identification is an important issue in terms of financing KM and measuring its value (a point returned to below). Accordingly, governments around the world vary tremendously in their usage of the term KM and how it is viewed within broader agendas for public sector renewal – including e-government.

Despite an intuitive link between knowledge management and electronic government, in general many governments have preferred to invoke the language of IM more often than KM with reference to digital governance structures and the impacts of new technologies. This linkage is no doubt partly due to the architectural focus of e-government, viewed by many as a term emphasizing digitized systems and mechanisms for storing, sharing and utilizing information. Yet, the key point remains that KM is often the vehicle for adding value in creating better outcomes – the premise of citizen-centric service transformation for example (whether or not such efforts are explicitly called KM or not). The issue is further complicated by e-government's emphasis on electronic channels and the widening prospect for virtual forms of transactions between public sector organizations and service users or recipients. Is KM still required, for example, if people are no longer required as the basis of the service interface?

The answer to this last question should be viewed as affirmative in that electronic channels only automate functions and displace human staff (and paper) in the most administrative and simplistic forms of transactional processes: payments, renewals and application submissions of various sorts. What remains are more complex forms of interaction where online information may be one component of the transactional process, but it is complemented by the need for guidance from, and discussions with public servants in order for services to be delivered. Many core areas of public service ranging from health care to workforce training and business development all rely on this mixing of channels, a mix that in turn accentuates KM's importance.

For governments, the financial services sector provides an important reference point in harnessing multiple channels to both automate simplistic transactions and create more sophisticated and catered services underpinned by both telephone call centres and in-person branches. Indeed, despite the early rhetorical promise of electronic commerce leading to widespread displacement of frontline service staff and their centres (or branches), across many countries in the developed world the past few years have witnessed an expansion of branches, traditional in physical form but now viewed as frontline nodes of a broader KM network encompassing multiple channels of service interaction and delivery. At the heart of the close connection between KM and customer relationship management (CRM) is the ability of front line staff to make use of the information and choices available across all delivery channels in order to create value for the customer or client. Although the terms 'customer' and 'client' are often used interchangeably, the latter may also denote a more complex set of services often requiring human interaction and dialogue, whereas customer relationships often tend to be more transactional and instantaneous (and thus conducive to automation and electronic forms of delivery).

For governments, as noted above, these distinctions are further complicated by the 'citizen' dimensions to relationships between the public and governments although in many jurisdictions such complications may simply be disregarded in the short term, overshadowed by an embracement of the logic of CRM and the business architecture of service delivery that is clearly the primary driver at present of public sector service transformation (Public Policy Forum, 2003; Paquet, 2004; Roy, 2006b; Dutil et al., 2007). In Canada, this trend is evident at all government levels: municipally, where many cities are following the US lead in developing 311 call centre initiatives designed to provide a single point of contact for the public on any service matter (this telephone channel is then aligned with online mechanisms for self-service options and tracking the processing of requests and transactions made online, via telephone or in person); provincially, where lead delivery agencies such as Service New Brunswick (www.snb.ca) explicitly instill corporate governance models and a customer-driven ethic in the delivery of public services; and federally, where Service Canada (www.servicecanada.ca) has recently been created to move in a similar manner as an integrated network of delivery channels acting on behalf of the Government of Canada as a whole (Roy, 2006b).

While different governments in Canada (and elsewhere) vary in their explicit embracing of the language of KM in terms of distinguishing knowledge from information management for example, there is little question that KM is central to the mission of these service strategies and lead entities. As just one of literally hundreds of examples, if all programs and services impacting senior citizens, across many different departments and agencies, could be interlinked and rendered accessible across an integrated delivery network, a much higher level of service could be generated for these elder individuals (at a much lower cost to government). IM provides the architecture for such alignment, whereas KM (information in action) is the lifeblood of actually responding both reactively and proactively to the needs, demands and circumstances of seniors in more integrative and holistic ways. Nonetheless, in adopting these interrelated and compelling logics of KM and CRM to transform service, two major sets of barriers and risks present themselves (perhaps more than two, but the two most central to the logic of this paper): first, resistance to more interoperable, horizontal governance; and secondly, the impacts of this customer revolution on politics and democracy. Both sets of challenges are central to public trust, albeit in different ways.

First, in terms of organizational and human resistance (and interrelated but often less entrenched issues of incompatible technology), the need for a government-wide approach to KM in order to foster integrated service outcomes is evident. This is a huge organizational undertaking: the Government of Canada, for example, is responsible for more than C\$200 Billion in annual spending, and Service Canada alone has more than 22,000 employees. The challenge here is that until recently, KM had been primarily promoted and developed as a department or agency-specific function, central to both policy and service delivery functions often residing in separate and specialized government units. It bears noting that these ‘silos’ (a negative connotation) were actually championed in past decades under the guise of new public management as a means to better customer service (by allowing for more focused mandates, empowered managers and workers, and more intimate ties to service recipients). Thus, the hugely significant challenge in government enjoining KM and CRM is how to at once share information across government in order to act on it in integrated ways where appropriate, while maintaining a delivery network that is flexible and responsive in meeting varying demands of the public externally and separate departments and agencies internally.

Secondly, in terms of the impacts on politics and democracy, one viewpoint is that good service facilitates public trust in government and efforts have been made to quantitatively demonstrate such a relationship (Heintzman and Marson 2005). Yet the more difficult question is to ask what sort of trust? A public viewing the government as an efficient and responsive provider of public services – one to be benchmarked with the private sector, may be less inclined to value and pursue democratic participation and active citizenship (Cherny 2000; Dutil et al., 2007). In this latter realm, KM is critical to facilitate public awareness, consultation and engagement, all clearly on the rise in an Internet-laden society where people are less deferential to traditional authoritarian structures such as representative democracy (Nelson, 1998; Borins et al., 2007).

Indeed, it is interesting to reflect on why it is that KM as a conceptual term has seemingly diminished in recent times under the rubric of service transformation. One possible explanation lies in KM’s organizational roots as a platform and enabler of strong employee engagement and participation – extendable to the realm of democracy through more active forms of citizenship and public engagement. Much as Parliaments and legislatures play a central KM role within existing democratic (or alternative) governing architectures, a widened KM infrastructure is required for more participative forms of democratic governance. While service transformation does most certainly stress employee engagement as an important element, there also tends to be a stronger focus on IM architectures and electronic systems and, as argued above, a tendency to view the public as a customer (i.e. a demanding consumer of services rather than engaged client or citizen). In other words, there is little need for a shared knowledge base between the citizenry and government in this customer service-laden world – beyond the specifics of the individualized service transaction at hand.

One response to these tensions is the recent presentation of ‘public value management’ as a ‘new narrative for networked governance’ (Stoker 2005). Explicitly contrasted with hierarchical and control-minded public sector traditions, as well as the competitive and customer-focused business mentality of new public management, public value management (NPV) is premised on partnership, nuance and dialogue:

The key point in understanding public value management...starts with the understanding that preferences are not formed in a vacuum and should not be taken as given. Part of the challenge of public managers is to engage in a dialogue with the public about their preferences but in a way that allows for deliberation about choices and alternatives...Discovering preferences involves a complex dialogue so that efficiency and accountability are trading partners, not the objects of a trade-off (p.51, Stoker 2005).

It may therefore be possible for the public to act as either customer or citizen, depending on the circumstance and need (and more importantly, the legitimacy of both roles must be built into governance). Stoker argues, rightly in my estimation, that NPV is the only sort of governance paradigm that can adequately address the complexity and interdependencies of today's governance and managerial systems that demand a renewed reconciliation of the often conflicting demands of efficiency, accountability and equity. Unlike the underlying logics of NPM and CRM, NPV embraces a much more multi-faceted set of relationships both within the public sector and between governments and other stakeholders including the public. This view is notably consistent with a recent and thoughtful consideration of the impacts of online connectivity and digital technology and democracy – and the importance of reconfiguring government-public engagements, enhancing the communicative power of citizens, and refurbishing legislative bodies and processes accordingly (Dutton and Peitu, 2007).

What becomes apparent is that any NPV-stylized approach to democratic governance is entirely dependent on a robust and shared knowledge management infrastructure enjoining governments and all sectors and the broader public at large. KM is therefore not only an internal architecture for better decision-making and service delivery, but a shared governance landscape for more active forms of engagement, dialogue and partnerships that are the basis of adaptive, accountable and effective governance.

4. Financing and Return

If KM is to enable the sort of outcomes and learning-based approach to governance and management called for by public value management (PVM), an important matter then becomes how to finance investments into KM as enabling infrastructure and how to measure impacts on performance that in turn determine return on investment (ROI). In order to dissect and respond to this general question, there are three (at least partially interrelated) variables that will be considered here: i) the scope of the KM infrastructure as either primarily internal to government or as a basis for societal development and learning; ii) the collaborative challenge of working with private industry in order to create and maintain a leading-edge KM infrastructure; and iii) the challenge of multi-faceted impacts, results and thus ROI metrics.

Investing in KM at multiple levels

With respect to the first dilemma, the previous section underscored the point that KM can be an elusive concept within the public sector, often intertwined with other dimensions of governance and management. Yet, it also bears noting that governments also bear responsibility for viewing KM as a prism for societal development within their own jurisdictions, including both the infrastructure and the skill base of a country or jurisdiction (to borrow here from the workshop background paper). This widened KM lens is entirely consistent with a PVM philosophy of governance emphasizing collaborative engagement, partnership and collective learning. In recognizing this shift for example, the Province of Ontario in Canada explicitly shifted their e-government strategy to an emphasis on e-Ontario to underscore this point.

The financing of this broader KM infrastructure for society as a whole is more encompassing of multiple forms of investment in telecommunications, education and training, and good governance capacities to generate sound decision-making. Again to draw from an Ontario example, the recent creation of fourteen regionally-based, Local Health Integration Networks is illustrative: they may be viewed as vehicles for facilitating both information interoperability and KM for regional health care systems in order to improve performance in a patient and community-centric manner (Roy, 2007a). Although their immediate funding base is provided by the Province, these networks are in turn meant to finance specific projects and strategies aligned with locally-determined objectives (and likewise accountable to local stakeholders).

Therefore, the main lesson derived from this first dilemma is the need to recognize the multiple forms of KM investments required both inside government and more broadly across society. A more specific lesson pertaining to digital technologies is the need to align the skills and capacities of public sector organizations with those of the citizenry, industries and communities at large – and to ensure a balanced and inclusive investment perspective. This balance and overall alignment is a crucial linchpin between KM and NPV in terms of fostering responsive and smart government, but also collaborative and leaning-based governance systems encompassing government and other stakeholders including the public.

Public-private partnering

In terms of the second dilemma, the balance and required collaboration between public and private sectors in creating and deploying KM infrastructures and tools, matters of financing are paramount. The attractiveness of leveraging private pools of capital investment is rooted in a similar context of new public management (NPM, not to be confused, but rather contrasted with the more recent variant of NPV discussed above) that arose during the 1980s, encouraging governments to look to industry for managerial techniques and governance practices.

Accordingly, the concept of a public-private partnership (P3) typically denotes private sector involvement in the construction and/or maintenance of a new capital asset. The British Government, for example, has devised the Private Finance Initiative: the purpose of this program has been to create infrastructure of a public purpose through mechanisms leveraging private sector involvement in financing, construction and maintenance. Seeking a middle ground between direct government control and outright privatization, PFI seeks opportunities to share responsibilities and risks, creating new assets via payment schemes and commitments underwritten by the stable involvement of government authorities. PFI has not replaced direct public sector provision, accounting for only a modest portion of overall infrastructure spending, but it has become an increasingly prominent – and controversial aspect of new infrastructure development across the UK. Defenders of the initiative point to the flourishing of new infrastructure projects (meeting public interest needs) that has been enabled by leveraging private sector capital investment and project management competencies, while shifting much of the financial risk associated with these new ventures to industry.

As infrastructure becomes more strategic and technologically sophisticated, questions pertaining to KM become more central. Within government, then, this partnership logic extends from the creation of new, tangible infrastructure assets to the maintenance and upgrading of organizational and often less physically tangible forms of infrastructure. The Province of British Columbia, for instance, has been Canada's most aggressive province in the utilization of 'outsourcing' efforts: outsourcing involves a transfer of assets – including hardware and software components as well as people – from public sector organizations to private industry and in some cases, to new governance entities jointly controlled by private and public interests (Langford and Roy, 2006).

These new relationships go beyond traditional notions of outsourcing – defined most simplistically as the transferring of assets from one party to another. Efficiency was the key driver of such outsourcing viewed as a basis for lowering operating costs via a network of externalized specialists. Yet, realizing such costs savings has proven elusive in many cases for a crucial reason (that continues to have relevance today for collaborative activity): namely that effectively managing these external relationships is more difficult and challenging than envisioned. A critical and shared knowledge dimension to such partnership management is a central determinant of success or failure in this regard (ibid).

Accordingly, there is some schizophrenia toward the concept of outsourcing even among industry itself – viewed by some as a trend likely to continue unabated despite widening concerns about failure rates and other difficulties. One major global study of outsourcing trends conducted in 2004 by DiamondCluster International, for example concludes that IT outsourcing is now a *fait accompli* in the business landscape. By contrast, an April 2005 report by Deloitte Consulting paints a very different picture, calling for 'a

change' in the outsourcing market that will see large organizations pulling away from such arrangements since the anticipated benefits often fail to materialize. Yet, the countervailing danger in not embracing some degree of outsourcing lies in the risk of performance stagnation and the rising costs of maintaining the status quo (Reed, 2004). The key shift from outsourcing to more enlightened forms of collaboration lies in the strategic alignment of internal and external contributions into a seamless architecture for sharing information and knowledge and creating more value-added outcomes.

Given the rising importance of electronic service, the creation of online portals as a means of integrated service delivery has been viewed by some governments and companies as an opportunity to pursue a partnership. The private sector invests in the creation and deployment of the portal as the customer/citizen interface – as well as the alignment of this interface to (re-organized) back-office functions at little or no upfront cost to government. In return, the private sector earns revenue streams from transaction fees based on usage, providing an incentive for both parties to promote successful uptake of the new delivery channel. The National Information Consortium (NIC) has been perhaps the most visible private sector advocate of such a model, partnering with a number of US State governments in long term arrangements of this sort. A similar logic enjoins Service New Brunswick and CGI in their ongoing collaborative partnership that saw both parties jointly invest in new online delivery mechanisms, retaining ownership over the resulting intellectual property and sharing in the proceeds of savings from service transformation in New Brunswick and any sales of the intellectual property to other governments (Dutil, Langford and Roy, 2005).

A considerable risk for the private sector in deploying transaction-based revenue partnerships lies in insufficient usage of the delivery mechanism. The risk for the public sector lies in the fact that any upfront savings can quickly evaporate if under usage persists, creating tensions and revisions that result in either unforeseen costs or breakage of the relationship. In 2000-2001, the City of Ottawa experienced just this sort of episode in its failed marriage with NIC and Deloitte Consulting (Roy, 2003). Paradoxically, however, today city officials stress that the knowledge gained from this aborted partnership has proven instrumental in enabling the City to progress on its own, as well as in concert with companies in more current and ongoing arrangements. A key lesson from usage-based revenue models (typically financed upfront by the private sector) is the central importance of generating high volumes of transactional services on which a robust business model can be created.

Doing so requires effective information and knowledge management mechanisms that must be built into the governance model for shared financing and risk. The relationship between Service New Brunswick and CGI is one well known case study (Pardo, 2006). More recently, Service BC and IBM Canada have forged a performance-based agreement to improve service outcomes. In forging this private sector partnership, the Province of BC put forth the following objectives: i) integrate the telephone, online and in-person service channels to provide consistent information and services to its citizens; ii) develop an approach to service channel management in which touch-points, technology platforms, data access and business processes are developed around the needs of the citizen; and iii) more effectively meet the needs of its clients and customers within a new integrated, cost-effective and efficient service delivery environment (Langford and Roy, 2007). The BC case is noteworthy since it is underpinned by a broader effort to embrace partnering: the creation of an alternative procurement system, *Joint Solutions Procurement*, is explicitly premised on the notion that the BC Government cannot define in precise terms at the outset what it requires and at what cost from external solutions providers (ibid.). The parameters of the relationship are the result of a process of joint discovery, in effect an attempt to embed proactive KM mechanisms into a collaborative governance model.

In pursuing the three aforementioned objectives of this partnership, information management addresses the critical challenges of privacy and security as information flows across government and between government and industry enable these sorts of objectives to be sought. In turn, knowledge management, the 'information in action', then allows for the fostering of more integrated, citizen-centred outcomes

(though it bears noting here that the usage of ‘citizen’ is in fact more in line with the CRM mentality of customer service). Accordingly, a shared approach to KM is embedded across a collaborative governance model with joint bodies of planning and review in order to adjust this partnership model as it goes forward in order to raise volumes, the basis of benefits to both sectoral partners.

Results, ROI & VOI

It is possible to argue that throughout much of this paper two distinct approaches toward KM have been emphasized – one largely internal to government and the other more societal in scope. Whereas the former is more closely associated with the service transformation agendas derived in part from the emergence of e-government over the past two decades, the latter is more encompassing of an infrastructure (also increasingly digital in nature though not exclusively so) for both socio-economic and democratic development processes.

The advantage of this distinction is that it more readily facilitates separate sets of metrics for results and return on investment across each realm. Internal KM efforts can thus be linked to reasonably tangible and measurable impacts such as cost savings and improved customer satisfaction, and also somewhat less quantifiable but no less important dimensions to organizational performance such as employee engagement and satisfaction and organizational learning. A broader view of KM for society as a whole is more difficult to gauge, more difficult still in light of competing political vantage points as to what is important, why, and the means for making such determinations (the discursive capacities for learning, compromise and collective action in light of such competing aims is a key premise of NPV). Indeed, with respect to public-private partnerships, the case for distinct tracks can also be made, as typically companies are either engaged to focus on the internal governance architecture of the public sector – or alternatively, to build new infrastructure (either directly or in concert with public authorities) that contribute to overall developmental capacities in a knowledge era.

Although there is therefore some merit in compartmentalizing KM initiatives in this manner (and in more precise terms as well), there is also a compelling case to be made for a broadened lens of KM in terms of both investment and return. The case is rooted in government’s unique role as not only a modern organization with policy and delivery capacities of its own, but also as the convenor and arbitrator of multi-stakeholder dynamics across all segments of society (Paquet, 1997). In other words, although this responsibility should no doubt be viewed as a shared one, government, uniquely accountable to the citizenry as a whole, is a crucial knowledge catalyst in shaping both the abilities of individuals and individual stakeholders as well as their patterns of competitive and collaborative engagement.

One specific risk of not taking a more integrative view lies in under investing in KM strategies and mechanisms at the interface of government and societal governance. In many developed countries, the diminished presence of the legislative branch is a case in point, as e-government facilitates an emphasis on technologies to both deliver services and undertake stronger forms of coordinated, government-wide action (both of which are intertwined with the concentration of power in the executive branch, a particularly prevalent theme in Parliamentary democracies). By contrast, KM offers a basis to rethink the role of the elected official and to bolster the political realm more generally as one more conducive to an NPV-based approach to network governance. In a knowledge era (and in a digital environment), there is considerable governance design work to be done in terms of creating learning mechanisms enjoining government managers, elected officials and more informed and empowered citizens (Paquet, 2004; Roy, 2006b).

A broadened focus on holistic KM challenges can also then enable investments across the public sector (often encompassing multiple jurisdictions) that can generate higher levels of technological interoperability, a precursor to the sharing of information and the co-development of knowledge. Public-private partnerships could thus be formed with this level of openness and interfacing in mind. At present, no doubt the Scandinavian countries are the most advanced in taking such an inclusive view of digital

governance both within government and across society as an overall infrastructure for development: it is not coincidental that governments in these countries are among the strongest proponents of open standards and open source solutions in strategizing for e-government, with higher levels of trust and concerted action between industry and government than is typically the case elsewhere (Roy, 2007b).

A useful concept for measuring the impacts of this broadened approach to KM lies in shifting from return on investment to value on investment (VOI) (Gartner, 2001). Although initially introduced as a means of better recognizing the ‘softer’ initiatives often associated with KM (organizational culture, learning, workplace satisfaction and engagement etc.), the notion of VOI can be thought of as an important proxy for pursuing a governance philosophy predicated on the principles of NPV (i.e. more deliberation, partnering, and learning in both defining and pursuing collective outcomes that often enjoin the private, public and civic sectors as well as the citizenry at large). In essence, VOI becomes a set of metrics to gauge the ‘collective intelligence’ of a governance system for a given jurisdiction (Coe, Paquet and Roy, 2001). There is also some symmetry between the fact that the nexus between collective intelligence, governance and digital technologies is first and foremost a localizing one – within so-called smart communities (ibid.), and the decentralizing flavour of NPV that stresses the importance of power-sharing and empowered communities.

Here is where emphasizing KM as a critical level of good governance is important since it responds to the countervailing trend of centralized information management that is common and prevalent in many large national governments (that may prefer to view digital technologies as means to augment their own visibility and reach across the country). Thinking about KM investments and VOI for a jurisdiction is therefore a challenge encompassing multiple actors and processes both within and outside of government. The resulting ‘federated governance architecture’ for a jurisdiction as a whole can then be ideally designed in a flexible manner, in accordance with NPV principles as well as elements of CRM (especially with respect to automated, transactional services).

Turning the concept of VOI into specific metrics and indicators is a complicated task both within the public sector and for society as a whole. Within a single government (viewing KM from an enterprise-wide perspective), a persuasive case has been made for the usage of a balanced scorecard approach in order to capture both financial and non-financial performance impacts as well as the relational strength of stakeholder engagements that are equally important in determining public sector performance (Kim 2006). This same type of approach should be regarded as transferable in some manner to the broader canvas of KM for society: i.e. the collective intelligence for jurisdictions as a whole. Examples of this latter approach range from the annual regional index or scorecard for California’s Silicon Valley (the exemplary knowledge-driven locality) to the efforts of many European countries to foster inclusive and multi-dimensional templates to measure the advancement and performance of a knowledge society, efforts that are particularly advanced in northern Europe (Ahokas and Kaivo-Oja 2004; Roy 2007b).

The commonality across subnational regions such as Silicon Valley and smaller countries such as those of Scandinavia is one of scale and capacities for cohesion and collaborative action, underscoring the more difficult challenge confronting larger and more diverse countries with more centralized national governments. Simply due to scale and the often inward tendencies of larger and more bureaucratic organizations, deploying KM strategies through NPV-stylized governance is a much more difficult task (explaining why in some federalist countries such as Canada, provinces and cities may be better able to do so).

5. Conclusion

By way of ending let us return to the definition of e-government provided at the beginning of this paper: the continuous innovation in the delivery of services, citizen participation, and governance through the transformation of external and internal relationships by the use of information technology, especially the Internet. With this definition in mind, three central lines of argumentation emerge from this paper.

First, in many jurisdictions service transformation agendas, the most prominent component of e-government, are construed in overly narrow terms due to a customer service fixation that emphasizes information flows more than knowledge management.

Secondly, knowledge management is central to not only better service delivery but also the creation of public value and relational capital through more deliberative, participative and flexible forms of participative governance.

Thirdly, measures of both investments and returns for KM must be devised to adequately assess the internal cognitive capacities of governmental organizations on the one hand – as well as the collective intelligence and combined governance performance of all stakeholders within a given jurisdiction on the other hand.

Indeed, here is where relational trust between citizens and governments is so closely intertwined with the ability of KM strategies and initiatives to achieve both better government and better governance (in other words to deploy e-government as a platform for NPV-inspired change as opposed to larger and more centralized organizational forms). As trust is derived less from deference to traditional authoritative structures and credentials (not only politically but also in industrial, labour, and religious realms), it is more intertwined with direct forms of participation and engagement (O'Hara 2004; Edelman 2005). KM must therefore be viewed as not only an inward strategy for governments to better reach out to citizens but also as an interactive canvas for shared learning and inclusive participation across society as a whole.

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PART II CASE STUDIES AND LESSONS LEARNED

ENHANCING TRUST IN E-VOTING THROUGH KNOWLEDGE MANAGEMENT: THE CASE OF THE UAE

Dr. Yasar Jarrar and Fadi Salem

Abstract

The United Arab Emirates' society has grown comfortable with the ubiquitous information and communication technologies. Despite repeatedly ranking high in terms of e-government readiness and social acceptance of ICTs, there were thoughts that the government decision to push for using e-voting in the first elections held in the country's history would be crossing the boundary of social acceptance of technology. This paper assesses the role of knowledge management in the e-voting process in the UAE's first election. A case study is presented to explore the assumptions on the impact of introducing an e-voting system on the level of trust in government and the role of knowledge management in increasing transparency. The paper argues that knowledge management can play an important role in widening social acceptance in e-government processes such as e-voting through increasing transparency, thus enhancing trust in government. However, a certain reservoir of trust in government is a prerequisite for social acceptance of e-voting, regardless of the e-readiness level in the country.

1. From No Voting to e-Voting

When Maysa Ghadeir first heard that she would have to use an "e-voting system" in the first election in the United Arab Emirates (UAE), she had mixed feelings of excitement and anxiety. Not only was it the first time she would be voting in a political process in the country, but she would have to do it using a new unconventional method through an electronic system. She would not be signing her vote on a paper ballot nor would her vote be authenticated using her fingerprint as do many polling processes in the Middle East. Instead, Maysa would use a national smart ID card or a barcode on her passport to authenticate her identity using a scanner, then touch an electronic screen with her fingertip to cast her vote, before finally watching the votes counted live on a large electronic screen, just minutes after the end of voting process. "Before trying the [e-voting] system, I was afraid that I might make a mistake while casting the vote electronically and that my vote would unintentionally be invalid or not go to my desired candidates" Maysa stated. When she finally cast her vote in the voting center in Dubai on Monday 18th of December 2006, Maysa's reaction was: "Overall, I thought the ease of use and speed of the process was very satisfactory."

Despite the many challenges and controversies surrounding electronic voting, many aspects of its value had been documented. For example, given that certain age groups have better acceptance levels for technology, the authorities in Geneva concluded after their e-voting experience in 2000 that e-voting can reinforce legitimacy of the public's choice through balancing the age group of voters (encouraging the participation of younger voters). In addition, Sheffield city council in the UK concluded that voting became more convenient and accessible when e-voting was introduced in 2002. The council also viewed e-voting as a crucial point of introduction to e-government through promoting the use of IT deployments such as smart cards and e-voting mock ups in public and educational institutions (UNDESA, 2007). There are several doubts which people have when it comes to e-voting. Is voting trustworthy and safe? Does the process itself affect the results? Does it reduce costs of conducting the voting process? Does it increase the level of participation?

Using a case study on the e-voting experience in the UAE elections held in 2006, the paper explores the assumptions on the impact of introducing an e-voting system on the level of trust in government and the role of knowledge management in increasing transparency.

2. Background on Political Participation in the UAE

Traditionally, the interaction channel that has been used between citizens and rulers in the UAE was the open *majlis* (council), where the rulers hold direct gatherings open to the public in their courts to meet directly with citizens. Since the foundation of the United Arab Emirates in 1971, all 40 members of its consultative assembly -- the Federal National Council (FNC) -- have been appointed by the rulers' courts in the seven emirates that comprise the UAE. Set up on the 2nd of December 1971, the FNC does not have full legislative power, as its role is limited to suggesting legislative amendments to the UAE cabinet. This *majlis* tradition has continued in the UAE alongside the FNC as an interaction channel between citizens and government.

In 2005, the president outlined a plan for reforming the political participation process and expanding the role of the FNC. The framework announced included three phases. The first phase took place on the 16th, 18th and 20th of December 2006 through indirect elections of half of the council members by an "Electoral College" (the other half of the FNC were appointed by the rulers' courts). The second phase will expand the role and legislative power of the FNC and increase the number of its members. Finally, the third phase will be a full public election process of half of the FNC members. To carry out the first phase, the government established the National Election Committee (NEC) in August 2006 to manage the first FNC election process (NEC, 2006b). One of the early decisions reached by the NEC was to use electronic measures for authentication and for the casting and counting of votes in the upcoming election.

Choosing members of the Electoral College was part of the first phase towards the plan for a more representative participatory system in the UAE. The country lacks an election law; therefore the government issued the Election Executive Instructions as the official framework for the election. According to the Executive Instructions, the Electoral College had to be chosen from UAE citizens by the rulers' courts in the seven emirates. The number of the Electoral College members was determined to be of multiples of a hundred based on the number of seats held by each emirate in the FNC as a minimum. The emirates of Abu Dhabi and Dubai hold eight seats each, Sharjah and Ras al-Khaimah hold six seats each and Al-Fujairah, Ajman and Umm al-Quwain hold four seats each. Based on this, the rulers of the seven emirates had to select at least 4,000 citizens as members of the Electoral College (NEC, 2006b). The rulers' courts had the liberty to choose more members if seen necessary, but 4,000 was the minimum number of members. However, the final number of Electoral College members reached 6,595, including 1,162 women. The last census carried out in the UAE indicates that the total population in December 2005 was 4.1 million. Out of this, around 825,000 are citizens, with the remaining population made up of multinational expatriates. More than 400,000 of UAE citizens are 20 years old or older and are potential voters (MoE, 2006). Based on this, the Electoral College members constituted around 1.7 percent of the UAE citizens' potential voters. The estimated total UAE population in 2006 was around 4.7 million (WEF, 2007).

The majority of the Electoral College members were between 21 and 40 years of age, with 21.9 percent being between 21 and 30 years old and 36.1 percent being between 31 and 40 years old (NEC, 2007). This does represent the young population of the UAE fairly well; according to the latest census in the UAE, around 69 percent of those 20 years or older (potential voters) fall in the age group of 20 to 40 years old (MoE, 2006). In terms of educational level, 63.1 percent of members in the Electoral College have a university-level degree or a postgraduate degree (NEC, 2007). Knowing these voters' characteristics is crucial in understanding the e-voting acceptance levels and trust in the e-voting process in the UAE.

3. Sending the e-Voting Message Out

The e-voting approach was chosen by the NEC for several reasons. Based on research conducted before the elections, the NEC reached an agreement on the use of an e-voting system. The decision making process on e-voting was articulated by different members of the NEC: The committee viewed the e-voting system as “modern” and as “a symbol of the progression of the UAE as an IT savvy society.” In addition to this positioning factor, the NEC opted for the e-voting approach because it is an “easy to use,” “most secure system for voting,” “more transparent than the manual methods” and can “deliver the election results in a very short period of time.” Nizar Maroof, who was involved in an earlier e-voting project in Bahrain and was a consultant with the NEC during the e-voting project in the UAE, stated that “due to the nature of the UAE election system, manual counting needs at least 48 hours to get the results ... while [with] e-voting, counting took less than 5 minutes.” In addition, the cost of conducting e-voting in terms of manpower required was “around a third of that with manual voting per site.” Moreover, Dr. Said Al-Ghufli, the Assistant Secretary-General of the Ministry of State for Federal National Council Affairs mentioned that “a key reason for choosing the e-voting approach was to establish a precedent for future elections.” By introducing e-voting systems and procedures at this early phase, he stated, the stage will be set when the country moves to the third phase of direct general elections.

The value of e-voting as seen by the NEC needed to be conveyed to the public. The NEC carried out an awareness campaign using different ICT and conventional channels on the election process as a whole and its e-voting element. This campaign was conducted using local Arabic and English newspapers and radio stations. Text message updates (SMS) were sent frequently to the Electoral College members. The official web site of the NEC (www.uaenec.ae) also made available the details and photos of all the candidates and the latest news and information on the voting process. The web site received more than 2.5 million visitors between October 1 and December 25, 2006. It also included information on other contact channels, a frequently asked questions page and official publications including an illustrated brochure on the steps to follow during the e-voting process. A hard copy of the illustrated brochure was sent to all members of the Electoral College by mail and was also disseminated throughout the UAE during public seminars.

In addition to the awareness campaign, the NEC made available different channels to facilitate interaction with the public and respond to candidate and voter enquiries on the election process. The committee members organized a series of interactive forums and seminars in all of the seven emirates, including universities and women associations. A call centre established by the NEC received more than 10,000 calls from the public and the members of the Electoral College prior to the election (NEC, 2007).

In order to ensure the smooth operations of the elections, the NEC had also conducted training for members of the Electoral College on the election process including the use of the e-voting system. Prior to the election days, two full simulations of the e-voting process were carried out, with more than 1,000 students from the UAE Higher Colleges of Technology participating. This served as an audit of the system and as training on e-voting for those interested. Members of the Electoral College were also invited to these open days where they were trained on using the e-voting system. As a member of the Electoral College, Maysa Ghadeir stated that “After testing and learning more about the e-voting system I was satisfied and found it easy to use and felt it was trustworthy.” Moreover, on the days of the election, a dummy e-voting system was made available outside the voting area for the voters to try before they actually cast the vote to make sure they were comfortable using the system. The administrative and technical personnel who were available in the voting centres were also trained on the “ethical, business and technical issues” for two days before the elections, Maroof added.

4. The Technical Team

The NEC formed a technical team to supervise the electronic systems to be implemented during the election process. The team included experts from different government departments, including the UAE General Information Authority, the Naturalization and Residency Administration, the Ministry of State for Federal National Council Affairs, the Ministry of Interior, the Emirates Identity Authority, the Civil Service Bureau and the Ministry for the Development of Government Sector. The team's role was pivotal for the success of the voting process as a whole. Its responsibilities included setting the standards for the e-voting process, supervising the development of the technical infrastructure in the polling centers, developing the information system to be used in the voting process, creating contingency plans and risk assessments and training the Electoral College and the poll centers workers on using the system.

The information systems supervised by the technical team were:

- (1) The Electorate Registration System: This included building the official database of voters which would allow each candidate to have a collective overview on his or her constituency.
- (2) The Candidates Registration System: This system allowed managing and updating candidates' information and verifying their eligibility to run in the election.
- (3) The Identity Verification System: The system ensured the authentication of voters' identities using an ID card or a passport. To speed the e-voting process, the system was also designed to identify candidates the voter is allowed to vote for, hence limiting the time spent while casting the vote. It was also designed to prevent duplicate voting by flagging the voter's entry in the system when a vote was cast.
- (4) The Vote Casting System: This system includes the e-voting kiosks, the voting database, the encryption system, the vote counting system and results presentation system (NEC, 2006a, NEC, 2007).

The NEC decided to build on the technical knowledge acquired in Bahrain through an e-voting system proposed earlier in the kingdom. The committee therefore signed a memorandum of understanding with the Kingdom of Bahrain for sharing the expertise on a consultancy basis. The technical team coordinated with the Central Informatics Organization (CIO) in Bahrain and consultants from the CIO were invited to assist the UAE technical team. Bahrain's CIO had been involved in designing an e-voting system and the Bahraini government was in the process of making use of the system in its municipal and parliamentary elections on November 2006.

When the Bahraini CIO team designed the e-voting system for implementation in Bahrain, they studied several case studies and recommendations such as those issued by the Council of Europe on e-voting. The voting system's engine was developed in collaboration with the United Nations Development Program (UNDP) and Microsoft Corporation. The UAE technical team, in collaboration with the Bahraini consultants, customized this system based on the local requirements and legislations in the UAE.

5. The e-Voting Controversy

Regardless of the voting method used, elections are usually associated with controversy. In 2006, the Bahraini government announced that an e-voting system will be used for its municipal and parliamentary elections, a first in the Arab region. Despite the build up to be the first Arab country to implement e-voting, the Bahraini government announced that it would not be using the e-voting system a few weeks before the election date. The voting was carried out using conventional paper ballots instead. The decision was made under pressure from opposition parties who viewed e-voting as something that the government would use to "rig the vote" (Salama, 2006). The issue was politicized during the election campaign when the opposition disputed the e-voting process and argued that it will enable the government to manipulate the results. The controversy forced the government to announce that the e-voting system will not be used in 2006 and that a mechanism similar to the 2002 elections will be followed instead. Minister of State for

Cabinet Affairs Shaikh Ahmed bin Ateyatallah Al-Khalifa said afterwards, “The government hopes that electronic voting would become acceptable to all parties in the future.”

The day that the press coverage on Bahrain’s abolition of the e-voting system came out, the NEC met and discussed the possible impact on the upcoming e-voting in the UAE. The Bahrain e-voting controversy, however, did not have much negative effect on the trust of the voters and candidates in the e-voting process in the UAE. “It was seen in politically different context ... there was no opposition to the adopted election method neither on the government level nor amongst the national population,” said Lana Nusseibeh, the Director of Media and Communication in the NEC. Unlike the UAE society, Bahrain is “a politicized society that had previous cases of conflict between the government and the opposition ... we did not have parties competing in this election on ideological issues, but rather individual candidates running campaigns on domestic issues, such as education, the economy and transportation.” While the UAE society is not as politicized as the Bahraini society, after Bahrain’s sudden decision, the UAE Minister of State for FNC Affairs, Dr. Anwar Garagash, did make a public statement defending the decision of the e-voting process in the UAE. “Bahrain’s decision not to use electronic voting in their upcoming elections is not in any way a reflection of the efficiency of the system. e-Voting is used worldwide and is recognized as being a secure, efficient and more convenient method of voting for the electorate” Gargash said in a press interview (Salama, 2006).

6. The First e-Voting Project in an Arab State

The process of casting the vote ran in three stages. First, voter identity was authenticated on a separate station using the national smart ID card or by scanning the barcode on the voter’s passport. The second stage is casting the vote on a separate machine. This design was followed to assure voters that no records were kept that link the voter’s identity to his or her vote. From a more technical perspective, Nizar Maroof stated that there were “no database tables links between [voter’s] registration and the vote casting.” At this stage, the voter swipes the national ID card or passport on a passport or ID card reader. A kiosk with a colored 21-inch screen then displays only those photographs and names (in Arabic) of the candidates that the current voter may vote for based on which emirate he or she comes from. The voter touches the screen selecting the candidates desired then confirms the vote by answering a confirmation prompt after each selection and as a final confirmation. The voter’s final confirmation instructs the system to print the voter’s choices of candidates on a paper ballot that was to be dropped in a box as a backup measure and for increased transparency. “The locked and sealed ballot boxes containing the paper printouts of the votes were delivered to the Ministry of State for FNC Affairs by police escort at the end of each election day.” Lana Nusseibeh stated.

According to the Executive Instructions, a specially designed booth in every voting station was made available for voters with special needs. “If help was still needed, then the e-voting process [was conducted] with assistance of the voting center’s manager or his assistant” stated Nizar Maroof. Although the photographs of the candidates were displayed on screen with their names, illiterate voters were provided assistance by the center’s manager or his/her assistant if required.

On the design level, an average voting centre had six workstations for voter identity checks and ten workstations for casting the vote (one of them specially designed for people with special needs). On the backend, two servers were running the e-voting software (as a redundancy measure). The software was developed by the Bahraini team under supervision of the NEC’s technical team. Although it was based on a proprietary Microsoft infrastructure, Maroof stated that “The Bahraini government decided to make the source code of the software available to any country that wishes to implement e-voting.”

The technical team conducted several risk assessment exercises and contingency plans were put in place. For example, both an Uninterruptible Power Supply (UPS) system and a power generator were ready in case of a power shortage. In addition, three IT professionals were on stand by in each voting center. A

plan was made for immediate switch to paper ballot in case of system failure. Two additional e-voting stations were on standby as plug-and-play replacements for any kiosk that might fail. Data was encrypted and stored in different media. The system ran on a closed local network isolated physically inside each voting center.

7. e-Voting Challenges

The design of the UAE e-voting system was not as complicated as similar systems developed in other countries that experimented with e-voting. For example see (Xenakis and Macintosh, 2005, Avgerou et al., 2005, Oostveen and Besselaar, 2005). The relatively small number of Electoral College members, their familiarity with smart cards as an identification method, the general technology acceptance among UAE citizens and the relatively high level of intrinsic trust in the government have all contributed to the smooth implementation and success of the e-voting system in the country.

“There were no legal or cultural challenges to introducing the e-voting system in the UAE” according to Tariq Lootah, Secretary General of the NEC and Head of the Election Management Committee. From a legal point of view, the NEC had the legitimacy to design the election process in a way that it sees most fit for the UAE. The Electoral Executive Instructions published by the UAE government acknowledge the e-voting as a legitimate method for participation. Sections 28, 31 and 39 clearly describe the actions to be taken by the NEC in case of using an electronic voting system in different stages of the election process (NEC, 2006b).

However, the technical team had to make decisions that take into consideration the ease of use, process transparency, voters’ secrecy and accuracy of results. As an example, based on the knowledge gathered through the voter registration systems used before the election, the team had to estimate the flow of voters in each voting center and decide the number of e-voting stations to be set in each center to keep the voting process smooth.

Designing an e-voting system that does not affect the equal opportunity of candidates entails special technical considerations. Keeping this in mind, the technical team had to deal with emerging concerns, look into scenarios and work with the consultants to design a system which considers such issues. For example, one of the challenges that faced the NEC’s technical team was selecting the size of the touch screen to be used in the e-voting. The screens needed 3-4 weeks to be delivered as they were not available in the local market, and the technical team had to decide on the size of the screen long before the final numbers of candidates was known. The screen should allow the voter to view all candidates’ photos and select the desired ones within few minutes time. If smaller screens were to be ordered, then having hundreds of candidates would force the voter to scroll through many pages to find the desired candidates. This would have increased the time spent by each voter casting the vote. Tariq Lootah noted how the technical team decided to pre-empt this problem through hardware and software design. The team “opted for ordering the larger 21-inch screens as well as adjusting the software design to display only those candidates that the current voter is eligible to vote for.”

The final list of candidates was announced on 30 November 2006 and included 456 members of the Electoral College. The team’s decisions assured that each voter would only have to scroll through few screens to find the candidates desired. This also reduced the possibility of voter errors while flipping through numerous screens. For example, a voter from the emirate of Ajman only had to go through 24 candidate photos, while a voter from Abu Dhabi had to go through 100 photos, instead of 456, to cast the vote. Lootah noted how “this helped reduce the time each voter spent on the voting process from an estimated 9-10 minutes to an average of 4-5 minutes per voter.” Overall, this increased usability, decreased the total time needed to cast a vote and reduced the possibility of voter error. Lootah argued that these factors had all contributed to increasing voters’ trust in the voting process and eventually in the UAE government.

8. Social Acceptance of e-Voting in the UAE

The overall turnout in the first political participation process in the UAE, and the first e-voting process in an Arab country, amounted to 74.4 percent of the members of the Electoral College across the country. The total number of candidates running for election reached 456, out of which 65 were women (NEC, 2007).

In order to assess levels of satisfaction in the voting process, the NEC, commissioned the Dubai Consultancy Research and Media Center (DCRMC) to conduct a survey into the level of voters' satisfaction. The DCRMC survey was ongoing at the time of writing this paper; however the preliminary data indicates a high level of satisfaction in the e-voting process (The number of Electoral College members included in the survey at the time of writing this paper were 252). Regarding the identity verification process, 91.8 percent of those included in the survey were satisfied with the system (among those 69.4 were "totally satisfied"). The e-voting system as a whole also received a high satisfaction level among those included in the survey, where a total of 93.5 percent were satisfied (72.4 "totally satisfied" and 21.1 percent "somewhat satisfied"). The e-voting system also facilitated a speedy voting process. This was also clear in the level of voters' satisfaction in the "amount of time required to conduct the voting process," where 92.2 percent were satisfied (67.2 percent totally satisfied). The NEC's web site also received a high voters' approval level as 78.5 percent were satisfied with the "effectiveness and comprehensiveness" of the web site (DCRMC, 2007).

Perhaps, the clearest indicator of voter trust and satisfaction with the system is the fact that "the NEC received no requests for recount," according to Lana Nusseibeh. There were also "no recorded attempts of manipulation of the e-voting system." However, the NEC received a contestation of election results after the election concluded in the emirate of Ajman. One candidate sent an email to the NEC arguing that a technical requirement of an eight-second interval between each choice while casting the vote jeopardized the chances of many candidates. However, "No time limit was enforced for the voters to cast their votes" Nizar Maroof insisted. The Appeals Committee convened on this issue and denied that there was any technical requirement (time wise) and that all voters were able to take as much time as they needed. "On many occasions it took many voters more than 20 minutes to finish casting ballots," the committee statement said. The complaint was eventually rejected by the NEC.

"One of the common comments we received was that this process was very organized in comparison to other voting processes in the region. The results coming out at the end of the day avoiding controversy over the results was also a main positive outcome" Nusseibeh stated. She argued that "if instead of the e-voting system a manual system was used, the process would have been less organized."

As a final testament to success of the e-voting exercise in the UAE, the NEC officially recommended reusing the same e-voting system in future elections in the country, as stated in its report on the first election experience in the UAE. The committee recommended that the system should be adapted to any new requirements according to the legislative or implementation developments (NEC, 2007). "Everyone was comfortable that the votes were accurately counted ... avoiding the drama of recounts," Nusseibeh concluded. As a member of Electoral College, Maysa Ghadeir agreed. "I think that the e-voting system had fulfilled its promise," she concluded.

9. Discussion and Lessons Learned

The UAE is a "technologically savvy society ... there is a lot of trust in technology," stated Lana Nusseibeh. This is a common perception in the country that regularly ranks high in knowledge society-focused benchmarking studies and report. For example, according to the UN e-Government Readiness Index published in 2005, which assesses e-government readiness based on infrastructure, web site assessment and human resources endowment, the UAE is ranked 42nd worldwide (UNDESA, 2005). More

recently, the 2006-2007 Global Information Technology Report ranked the UAE 4th worldwide on the level of “Importance of ICT to Government Vision of the Future.” The UAE also ranked 7th among 122 countries in both “Government Success in ICT Promotion” and “ICT Use and Government Efficiency” indicators as well as 25th on “Availability of [government] Online Services” (WEF and INSEAD, 2007). Clearly, the UAE society enjoys a healthy social acceptance level for information and communication technologies. The successful government policies in promoting ICT use in society is a key factor that contributed to this, which is also referred to as technological trust (Blind, 2006). This in turn has contributed to the high level of trust the government enjoyed in the UAE.

Miller and Listhaug state that political trust is “judgment of the citizenry that the system and the political incumbents are responsive, and will do what is right even in the absence of constant scrutiny.” In other words, political trust is the citizens’ assessment of the government and politicians as fair, efficient, honest and promise-keeping (Blind, 2006, Peters, 2001). The UAE government enjoys a comfortable reservoir of political trust among its citizens. According to the World Economic Forum’s *Arab World Competitiveness Report* published in 2007, the perception of politicians’ honesty in the country is high. The UAE ranks 9th worldwide in the “Public Trust in Politicians” indicator (WEF, 2007). The steady economic growth, security and political stability in a violently turbulent region have all provided the government with a healthy reservoir of trust among citizens.

The following example displays the contribution of this intrinsic political trust to e-voting acceptance in the UAE. In the second stage of casting the vote, the voter scans the national smart ID card or the barcode on the passport before the list of candidates is displayed on screen. The technical team insists that the technical design of the system does not record the user data at this stage and that the identity information is totally separate from the voting information. “This is only done to make sure that the voter will not use a different ID card or passport that might be used to cast a vote illegally,” Nizar Maroof stated. At this stage, a skeptical voter might be hesitant to scan any personal ID document on the same machine he or she will be casting the vote on. The level of intrinsic trust in the UAE government among its citizens made this issue irrelevant to voters. This is reflected in the high satisfaction levels of voters in the e-voting system and more specifically in the authentication process (DCRMC, 2007). One would argue that this will be a cause of concern in other countries, where any system proposed by the government would be scrutinized by the opposition and the civil society, such as for example, the opposition’s rejection of the e-voting system in Bahrain (Salama, 2006) and the controversy over the use of government proposed ID cards in the UK (LSE, 2005).

Perhaps the question that calls for more research while studying e-voting approaches is the following: Would the use of an e-voting approach affect the final outcome of the voting process? In other words, does using an e-voting system affect the behavior of voters in a way that might alter the final results *vis a vis* a manual system? Some research had been conducted in earlier e-voting exercises and had found that the effect is limited (Oostveen and Besselaar, 2005). However, assuming “flawless” technical system design, the use of an e-voting system should theoretically put more control over the final voting results in the hands of the voters themselves, compared to a manual system that is more dependent on the factor of human error while counting the results. A recount in a manual system has a high probability of bearing different outcomes each time it is conducted. This is considerably less probable when using an e-voting system that adopts a theoretical “flawlessly” designed structure for security, privacy and information management.

However, similar to traditional voting approaches, e-voting systems are also susceptible to human errors. Tariq Lootah recognized the common error margins that all voting systems are vulnerable to, traditional and electronic alike. Lootah argued that “in a traditional voting system, human errors mostly happen while counting the votes. This error is suppressed in e-voting systems; however the possibility of the human error by voters’ unintentional mistakes while choosing the candidates electronically is higher in an e-voting system than that in a manual system.”

How does this change the trust model between voters and the government? If voters reach a level of political trust in an e-voting system that assures them that the government will not use it to manipulate the result (a very difficult goal to reach), or if they reach a level of trust in the government that assures them that it will not manipulate the system, then how would the voters view an e-voting system that puts more control in their hands coupled with a higher possibility of error while casting the vote? This paradox and its underlying assumption calls for more research, especially in developing countries where levels of trust in the government are not ranked as highly.

Introducing e-voting might have a positive or negative impact on citizens' trust. It does not increase the citizens' trust in the political process *per se*. While the momentum was building in the UAE for the first voting process using an electronic approach in the country, the same e-voting system proposed in neighboring Bahrain came under a vigorous attack by the opposition. One could argue that the intrinsic level of trust between voters and the government in the UAE and Bahrain was one key factor in forming the public perception of the role of e-voting in each country.

Xenakis and Macintosh argue that citizens' trust in e-voting is developed based on four levels of trust. In the first level, the citizens (voters and potential voters alike) recognize the new and alternate technologies as an acceptable medium for casting the vote. This denotes accepting the new process as well as the results introduced by the e-voting process (Xenakis and Macintosh, 2005). In addition to the generally high level of technology acceptance in the UAE, one would argue that the structure of the Electoral College has itself contributed to the high level of satisfaction and acceptance levels among voters. Firstly, the fact that the Electoral College was chosen by the government is a factor that should be considered while studying the level of trust in the e-voting process in the UAE. Compared with the case of Bahrain, where voting was open to all nationals (supporters and opposition alike), one could argue that the high satisfaction level in the voting process in the UAE might partly be due to the fact that voters were chosen by the government. Secondly, both age and education are related factors to social acceptance of technology. The majority of the Electoral College is relatively young with good levels of education. With such a technology savvy electoral base coupled with comfortable levels of trust in the government, one can argue that introducing the e-voting system contributed to raising the level of approval and trust in the UAE government. This said however, how would the voters react when the next phase of the electoral reform in the UAE takes place where all nationals would be allowed to vote? Moreover, how would the introduction of an e-voting system impact the trust levels in countries where the population does not enjoy the same technology acceptance levels? Some studies have been conducted in this area (Avgerou et al., 2005), however, this is a question beyond the scope of this paper.

In theory, e-voting systems do limit the possibility of corruption to a few senior government employees. In comparison, paper-based elections allow for possible corruption on a wider hierarchy of government employees who interact with the voting process (counting, ballot box transfer, etc.). Paper-based systems are also susceptible to an even wider margin of unintentional error in the counting phase.

In summary, the e-voting system used in the UAE 2006 elections was perceived as trustworthy by the Electoral College because of the following characteristics:

- Openness and transparency of the NEC in making the system available to the public for testing and inspection before the elections.
- Ease of use and simplicity of the e-voting process.
- The perception of security of the process.
- Efficient vote counting process.
- The paper ballot backup.
- The voters' sense that more control over the results is in their hands (rather than in the hands of the ballot counters in the manual systems).

10. Utilizing Knowledge Management to Enhance e-Voting Transparency

Knowledge management has been described as a cultural shift from the old maxim “knowledge is power” into a new state of mind that views “sharing knowledge is power.” This relatively new management approach can play a key role in increasing transparency in the e-voting process in the long run.

Knowledge management approaches and methods have in recent years been used in various government departments and ministries in the UAE at the local and federal levels. For example, the federal e-government strategy highlights the importance of knowledge management among government departments:

In the digital economy, the creation and strategic use of knowledge -- how well it is managed, shared, transmitted and stored -- is growing in importance. Government must lever enterprise-wide IT initiatives to manage records, information and knowledge resources in ways that were never before possible. Just as importantly, knowledge must be viewed as a resource to be nurtured and shared in support of broad corporate goals. While knowledge creation, transfer and sharing are principally behavioral, IT can be a key enabler in this process. To succeed in the future, government ministries and departments must collaborate to develop the necessary systems, strategies and cultures for knowledge management (Government.ae, 2007).

To document the lessons learned from the first voting process, the DCRMC conducted a study on the election process in collaboration with the NEC. Tariq Lootah stated that the intended outcome of this study, which will be the first of a series directed by the NEC, is to develop the election culture and “ensure transparency and accountability throughout the election process and boost awareness of the elections.” The overall goal according to Lootah is to “encourage greater political participation in the UAE ... and provide a guideline for future election procedures.” This continued management of the knowledge acquired through the country’s first experience will not only be crucial for its next phase of modernization of the democratic process, but will also be key for countries in the region that share many of the challenges in developing their participatory systems. In general, Arab governments share similar barriers to developing their e-government initiatives with some local variations (Salem, 2006). As an e-government application, one could argue that e-voting implementation would similarly face common social barriers on the regional level with local variations as well. The knowledge acquired in the case of the UAE e-voting experience would prove invaluable at the regional level.

In addition to the knowledge management steps taken by the NEC prior, during and after the election process, the following additional steps will help sustain electorate trust in e-voting in any e-voting process in the future:

- When a new electronic service is introduced in an e-government project, such as e-voting services, users (voters in our case) need to be trained to use the new service efficiently and be kept up-to-date on developments of using the service in the future. This is an area where knowledge management can play a key role at the governmental level.
- The knowledge acquired by the government prior to and during the voting phases will be invaluable for the development of the next e-voting process in the country. This includes the feedback received from voters and candidates through the web site, surveys, training workshops and seminars proceedings.
- The technical team and the system developers’ implicit and explicit knowledge acquired through the development and implementation phases can provide the building stone for developing a next phase of the e-voting system that meets the needs of the future electorate. This includes enhancing the areas of security, privacy, social inclusion, ease of use and efficiency.
- Making the source code of the software used in the e-voting process available for scrutiny by technical universities and IT focused NGOs will facilitate developing a more secure and inclusive system and increase the society’s trust in the e-voting process. This in turn, will increase

transparency and knowledge sharing, facilitating wider e-participation. In a related concern, dependency on a sole private sector IT provider or consultancy and having private voters' information available to them might put the electorate trust in the e-voting process at risk.

- Transparently developing the systems approach to security and privacy is particularly important to ensuring citizens' commitment to the e-voting process. The behavioral and cultural knowledge acquired during the e-voting process on citizens' use and acceptance of authentication methods will be invaluable for future development of new authentication measures that might be used in future e-voting processes.
- The implicit knowledge acquired by the organizing team (the NEC in our case) and the voting centers staff should be documented to make sure that it does not dissolve through time.
- Transparency in making this knowledge available to society and the future electorate base is imperative for sustaining or enhancing the level of trust in the e-voting process in particular and in the government in general. Even in apolitical societies, ensuring transparency in the e-voting process would reduce the possibility of politicizing the process by political powers as the democratic process develops and society gets more polarized.

Figure (1) displays the main information flow map between government and citizens in an e-voting system, based on the case of the UAE election. The diagram could help understand the knowledge acquisition processes and how they could be managed during the e-voting process among different parties.

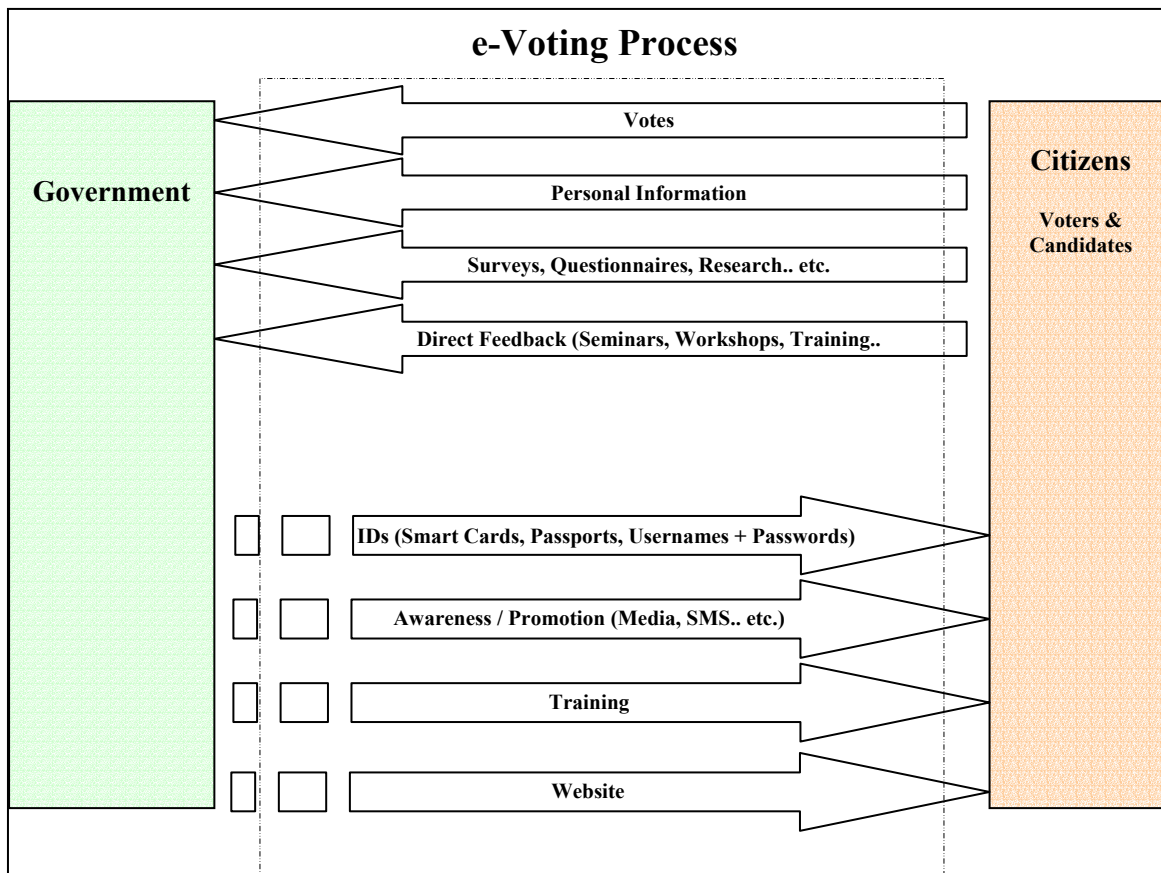


Figure (1): Information Flow Map between Citizens and the Government in an e-Voting System based on the case of UAE e-voting.

11. Conclusion

“Trust, both in its social and political forms, is the *sine qua non* of good governance” (Blind, 2006). In developing countries where governments usually suffer from low levels of trust coupled with low level of citizens’ technology acceptance, e-voting should be introduced cautiously. In such countries, knowledge management approaches can be utilized when introducing an e-voting process to accelerate citizens’ acceptance of the process through increasing transparency. However, overall trust in the political system would clearly require a more comprehensive government overhaul of the economic, societal and democratic approaches.

The Council of Europe indicates that no election system can guarantee 100 percent security, neither electronic nor paper based. However, the system has to be perceived as secure by the electorate in order to be implemented. Achieving a certain level of trust in government is one prerequisite for introducing an e-voting system. This has to be coupled with achieving a certain level of social acceptance of ICT by society. Both factors are prerequisites of e-voting in developing countries. While the Bahraini society enjoys a relatively high level of acceptance of new technology (WEF and INSEAD, 2007), the level of citizens’ trust in government is intermediate compared to the rest of the Arab World (WEF, 2007). This has contributed to a negative perception held by many citizens on the approach of e-voting introduced in the country and to the eventual abolition of the system. On the other hand, the UAE, which enjoys a high level of government trust coupled with a high social acceptance and trust in technology, the e-voting system was endorsed more openly by voters. Moreover, a preliminary generalization can be made from the e-voting experience in the UAE: Introducing an e-voting system in a society that enjoys both an advanced level of technology acceptance coupled with a healthy level of political trust in government can be a catalyst for further boosting the level of trust in the democratic process and enhancing the level of trust in government as an outcome.

Applications of e-government in general and e-participation approaches in particular can play a crucial role in decreasing information asymmetry between citizens and the government (Blind, 2006). Using a case study on the e-voting system in the UAE, we have provided an ample view of the key information flow areas in an e-voting system among the main agents involved. The role that knowledge management can play in making e-voting more transparent and appealing can lead to greater citizens’ participation in policy, one of the cornerstones of good governance. However, lack of sufficient trust in government and fear of inadequate privacy and security can hinder acceptance of e-government applications (EC, 2006). One could argue that e-voting is one of those e-government applications that require a sufficient amount of trust in government beforehand.

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ACHIEVEMENTS IN KNOWLEDGE-BASED ADMINISTRATION AND FUTURE DIRECTIONS FOR THE REPUBLIC OF KOREA

Dr. Nam-Joon Chung

1. Introduction

In today's knowledge-based society, knowledge is gaining increasing importance as a valuable intangible asset and a core production mechanism of various organizations. To enhance public trust by meeting the administrative demand that is growing alongside social development, while efficiently responding to complicated social problems, the Republic of Korea government has placed the acquisition and utilization of quality knowledge through knowledge management at the forefront of its efforts.

It should be noted that the concept of knowledge management is not new. While the advancement of information technology and the Internet has generated an overflow of information, the act of collecting, processing and disseminating countless pieces of information which comprise the concept of knowledge management has existed even before such technology was conceived. In the history of the Republic of Korea a prominent trend that falls into the definition of knowledge management can first be found in the beliefs of seventeenth and eighteenth century known as 'Silhak', or the school of practical learning. The writings of major scholars of 'Silhak' including Yu Hyeong-won, Hong Dae-yong, Park Ji-won, Jeong Yak-jeon and Jeong Yak-yong (Dasan) all adhere to the common principle of 'collecting and arranging dispersed pieces of information for transformation into systematically useful knowledge.' In this respect, they were the original 'knowledge managers' of the Republic of Korea (Jeong Min, 'Dasan's Lessons in Knowledge Management', 2006), especially considering that the efforts made by these scholars to plant the seed of knowledge management in the Republic of Korea were not based on an extravagant pursuit for frivolous erudition or a showy display of academic debate. Rather, the scholars placed a high priority on actual usage for the country and its people under the purpose of what they called 'Sil-sa-gu-si' (an eastern sense of pragmatism which means 'quest for truth, based on facts').

Similarly, the Republic of Korea government has also implemented knowledge management with a strong commitment to actively providing public service through the enhancement of government policy and services through the discovery, sharing and utilization of useful data dispersed throughout the governmental organization. The Republic of Korea government began systematically implementing knowledge management in 1998, and undertook various efforts to develop a standardized government knowledge management system and to connect the knowledge management systems of various agencies through the Government Knowledge Management Center (GKMC). However, knowledge management was not treated as essential at this time, and was implemented only from a systems perspective.

The inauguration of the Roh Moo-hyun Administration in 2003 signaled the opening of a new chapter for knowledge management in the Republic of Korea. Emphasizing that 'the failure to implement knowledge management can only result in a second class country and third class administration,' President Roh issued an order to develop and roll out an information and data gathering and sharing system throughout all ministries of the government. In particular, the high-level knowledge management meeting organized under the President in August 19, 2005 emphasized the role of knowledge as an engine for enhancing government competitiveness, and providing a turning point in re-establishing the necessity of knowledge management on all levels of government.

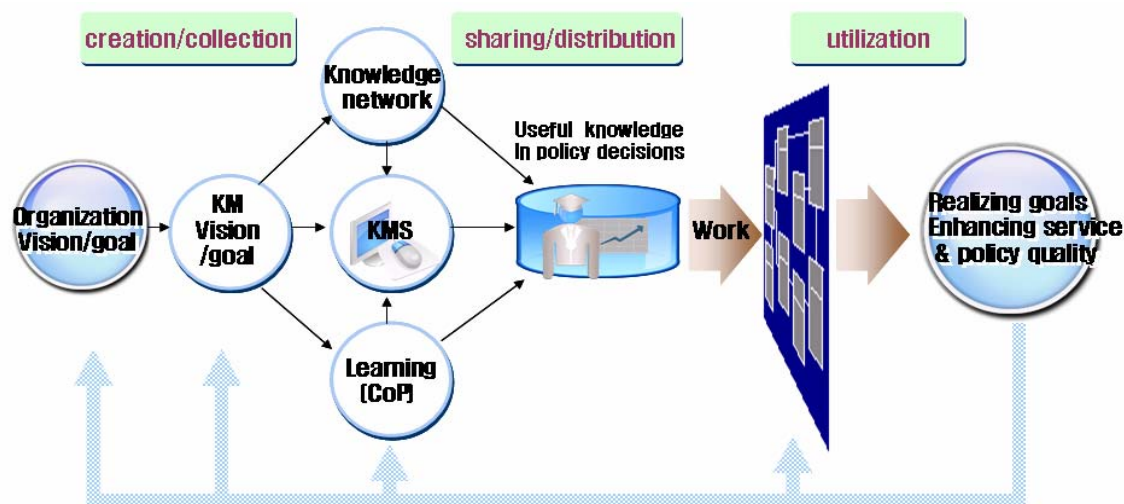
The President's strong leadership has been inducing a shift from system-oriented knowledge management to a 'knowledge-based administration' which is closely connected to administrative processes. Knowledge-based administration is a creative and systematic undertaking by the government to enhance policy quality and administrative services through knowledge activities. In contrast to the passive and methodological concept of knowledge management where the focus lies in the management of

information resources, knowledge-based administration is an active and integrated concept emphasizing the purpose of enhancing the quality of policies and administrative services through knowledge-based administrative processes.

Table 1-1 Knowledge Management vs. Knowledge-based Administration

Knowledge Management (centered on information systems)	Knowledge-based Administration (connected to administrative processes)
focused on the management of knowledge resources	administrative processes based on knowledge
centered on digitalization and systemization (focus on methodology)	geared on purpose of policy and service quality enhancement
not directly connected to operations	directly connected to the goals and operations of the organization

Figure 1-1 Conceptual Framework of Knowledge-based Administration



2. Direction and Achievements of Knowledge-based Administration in the Republic of Korea

Knowledge-based Administration and Government Innovation

Futurist Alvin Toffler called the phenomenon in which the bureaucracy of the industrialization era interferes with the development of a knowledge-based system that creates wealth the ‘Clash of Speeds (A. Toffler, ‘Revolutionary Wealth’, 2006). Sharing of information generates ‘power,’ which in turn enhances speed. However, it is difficult to establish a culture for sharing information in a closed bureaucratic organizational culture. Having accurately pinpointed such changes in the administrative environment, the Roh Administration has selected government innovation as one of the government’s top-priority agenda needed to change the government in a way adaptive to a knowledge-based society. The two pillars of government innovation are the enhancement of ‘efficiency’ and ‘transparency.’ Knowledge-based administration encompasses both pillars in its pursuit of building an ‘efficient and transparent government.’

The widespread sharing and utilization of quality knowledge enables better policies and services in a shorter period of time. By utilizing the high quality knowledge registered in its Knowledge Management System (KMS), the Ministry of Justice was able to reduce the time it took for group tourists to go through

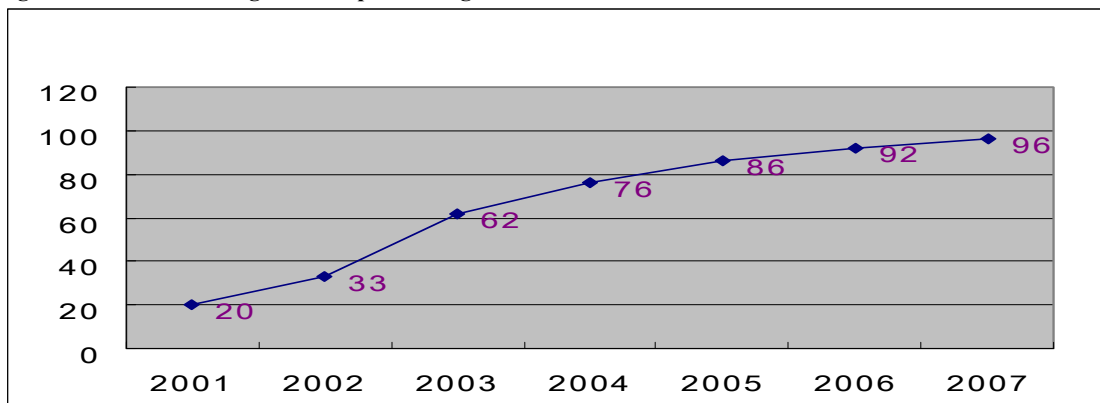
immigrations by 90%. The extra time was allotted to service improvements at Incheon International Airport, for which it was ranked number one in 29 of the 32 categories evaluated in the ASQ (Airport Service Quality), conducted by the Airport Council International. As a result, it received recognition as the Best Airport Worldwide in 2005 and 2006.

Interactive communication between the government and the people within an established knowledge network greatly enhances transparency in government. Since March 2005, the Republic of Korea government has increased public participation in government by launching an online portal called ‘Online Citizen Participation Portal’ (<http://www.epeople.go.kr>), where anyone can submit civil grievances or suggestions at any time through the Internet. The enactment of the Official Information Disclosure Act in December 1996 also contributed to increasing transparency in all government policies by establishing a principle of disclosing major administrative information through continued institutional improvements. Implementing the components of the Web 2.0 system has invigorated knowledge sharing and participation in government policies, transforming the role of the people from mere ‘consumers’ to ‘proposers’ of administrative services. Like the image of a future government illustrated by William Eggar in his book ‘Government 2.0,’ such efforts clearly demonstrate the government’s commitment to building trust in the Republic of Korea government by providing people-centered services and increasing public participation in order to create a more transparent, democratic and efficient government.

Progress Report on Knowledge-based Administration

As the ministry in charge of supporting the generation and sharing of new administrative knowledge, the Ministry of Government Administration and Home Affairs (MOGAHA) has extended various efforts towards advancing knowledge-based administration. In addition to the aforementioned high-level meeting, diverse measures have been taken such as a joint central-regional government knowledge manager workshop, publication of various knowledge related manuals, and discovery and dissemination of best practices. As a result of these efforts, the number of organizations implementing the government’s knowledge management system has jumped from a mere 20 in 2001 to 96 as of April 2007 (47 central agencies, 14 municipalities and 35 district bodies). The gap in knowledge-based administration between central and regional government bodies, however, remains an outstanding issue. The foundation for knowledge-based administration has been laid among central government bodies, where 94% of organizations are currently implementing their own knowledge management systems. On the other hand, only 49 (or 19.9%) of the 246 regional governments have an individual knowledge management system. While some regional governments are actively pursuing knowledge-based administration under the strong leadership of their agency heads, most still have not even acknowledged its importance.

Figure 2-1 Number of Agencies Implementing KMS



The level of knowledge-based administration displayed by the central government is improving every year. MOGAHA has defined four stages of knowledge management development extending from the establishment of KMS to maturity, against which the level of knowledge-based administration practiced by the government has been evaluated since 2005. The developmental stages of knowledge-based administration are 1) **implementation**, where the KMS is established and the importance of knowledge management is recognized, 2) **adaptation**, where a culture of knowledge sharing is developed and the quantitative amount of knowledge increases, 3) **activation**, where operation-centered knowledge management is achieved and the quality of knowledge is enhanced, 4) and **maturity**, which is the final stage in which knowledge is freely exchanged with outside organizations.

Table 2-1 Developmental Stages of Knowledge-based Administration

Preparation	Stage 1 (Implementation)	Stage 2 (Adaptation)	Stage 3 (Activation)	Stage 4 (Maturity)
20~45	45~60	60~70	70~85	85~100
'knowledge mentality' not yet formulated	KM recognized KMS implemented	knowledge sharing culture formulated knowledge increase	operation-centered KM qualitative enhancement of knowledge	core knowledge knowledge exchange with outside
KMS not implemented	KMS manager appointed	KM team formed	increased usage of knowledge in operations	integrated knowledge portal

(numbers depict the KMI range)

Source: MOGAHA, "Development and Diagnosis of the KMI" (2006)

A comparison of evaluation results between 2005 and 2006 displays an overall improvement in the level of knowledge-based administration within the government. In 2005, 36% of total organizations remained in Stage 1, 39% in Stage 2, and 25% in Stage 3. Not a single organization had yet reached Stage 4. In 2006, the level of knowledge-based administration was evaluated based on the Knowledge Management Index (KMI) developed in September 2006. KMI is comprised of: □) 15 factors forming the foundation of knowledge management including the awareness of involved members, vision and strategy of knowledge management, and open communication channels; □) 6 factors measuring knowledge-based administrative activities including the creation, organization, sharing, utilization and accumulation of knowledge; □) and factors measuring qualitative and quantitative performance. According to the KMI diagnosis taken in December 2006, the average KMI value of agencies surveyed was measured at 72.975. Notably, the number of agencies in Stage 3 or above (26 organizations, 54%) exceeded the number of agencies in Stage 1 (2 organizations, 4%) and Stage 2 (20 organizations, 22%). These results show that at least the central government is reaching a level in which knowledge management is being extended into administrative operations, and therefore enhancing the performance of the organization.

Table 2-2 Number of Central Government Agencies by Development Stage of Knowledge-based Administration

Year	Preparation	Stage 1	Stage 2	Stage 3	Stage 4
2005	8 (17%)	9 (19%)	19 (39%)	12 (25%)	-
2006	-	2 (4%)	20 (42%)	15 (31%)	11 (23%)

Next, efforts being taken by the Republic of Korea government in the field of knowledge management are introduced through case studies.

3. Best Practices in Knowledge-based Administration

On-nara BPS

On January 2, 2007, a business process management system called On-nara BPR was implemented in 54 central administrative organizations. On-nara BPS was developed under the purpose of transforming work processing methods from a person-centered to a system and knowledge-centered process. Displaying a focus on government innovation since the day of its inauguration, the Roh Administration has shown a strong interest in implementing a business process management system that will enable knowledge-based administration. After its conception under the name of “Easy-One” in November 2004 as a body of Office of the President, the system was modified by MOGAHA to fit the needs of general government bodies. After going through a trial operation on five agencies, the system is now being actively utilized in 54 central and provincial governments under the name of “On-nara BPS.”¹

On-nara BPS has standardized and systemized the entire administrative operations process from planning to enforcement. Administrative operations are systematically categorized by function and purpose, based on which actual administrative operations are recorded and managed. In addition, document processing has been standardized, enabling all policy decision processes to be recorded and manufactured into knowledge. Schedule management, instruction management and meeting management functions have been appended, making it possible to systematically manage diverse administrative operations. The major functions of On-nara BPS can be summarized as follows.

1. Document management: standardization of work processes such as the generation, distribution and preservation of documents, and the recording and maintenance of all decision-making processes.
2. Task management: management of personal operation purposes and scope, stage of processing, and operations performance.
3. Daily plan management: Registration and management of personal plans and schedules
4. Memorandum reporting: Simultaneous reporting of memorandums or approval items to multiple recipients
5. Meeting management: Registration and notification of meeting agenda, and system management of meeting results
6. Direction management: Management of directions and results of directions issued by Minister

Currently, MOGAHA is building an integrated government knowledge management system that will connect the KMS of each organization, On-nara BPS and various administrative sites posting ordinances and statistics. This will enable the sharing and utilization of high quality operations-based administrative knowledge throughout the government. By connecting the systems of each agency with On-nara BPS which comprises the basis of government work processing, the documents and reports that are generated as a result of various operations are accumulated as real-time knowledge, and operation managers are able to share information regarding major policies and services of other agencies. The demands of the people can be analysed and examined from various perspectives, to be utilized in high quality policies and services. Operation manuals, ordinance information, research data, policy related information, statistics and training information can also be searched and utilized within the system. The integrated knowledge management system that is slated to go live in the end of 2007 will also include a community space to discuss policies among different agencies. This mechanism for civil servants from various organizations to freely discuss and seek responses to policy issues in online communities is anticipated to form the foundation for providing seamless services to the people.

¹ ‘On’ means ‘complete’ or ‘total’ in Korean and ‘in a working state’ in English. ‘Nara’ in Korean depicts the meaning of ‘nation’ or ‘government.’ ‘BPS’ is an acronym for Business Process System. Thus, ‘On-nara BPS’ signifies a government in which all systems of the nation are connected and always in working condition in order to serve the Republic of Korea public.

Connecting the integrated knowledge management system, digital budget and accounting system, electronic integrated public service evaluation system and records management system to the On-nara BPS by the end of 2007 will enable integrated operations management throughout the government, completing a system-based foundation for a knowledge government. Furthermore, the public knowledge connected throughout the network will be disclosed to the public through the integrated information disclosure system excluding those that require confidentiality, and the people will be able to freely exchange opinions regarding various policies through ‘Online Citizen Participation Portal’. Therefore, instead of simply being consumers of government services, the people will take on a more active role of a ‘prosumer,’ directly participating in the production of various administrative services and policies. The act of ‘prosuming’ will enhance the efficiency and democracy of the government, fundamentally contributing to building trust in the government.

Figure 3-1 Conceptual Link between On-nara BPS and Major Administrative Systems



Total Quality Management of Public Policies

Recognizing the need for a systematic quality management measure encompassing the entire policy making to prevent policy failures and enhance policy effect, the Roh Administration carried out a full launch of a policy quality system in July 2005, based on the TQM method applied in the private sector. Items and procedures that need to be considered in each stage of the policy process such as policy formulation, implementation, evaluation and feedback were organized in a manual, and training programs regarding policy success and failure cases were strengthened in an effort to improve policy quality.

TQM utilizes a checklist called a self-assessment/review (SAR) checklist as an execution tool. The checklist divides policy processes into four stages, 19 check items and 65 detailed items, in order to identify and improve bottleneck areas throughout the policy formulation, promotion, implementation, evaluation and feedback process. As of the end of 2006, the government had designated various agencies to apply the SAR checklist on 651 tasks. Eighteen months into the full implementation of TQM, tangible effects are being observed in the areas of policy quality improvement, changes in work attitude, and strengthened personnel and organizational capacity. The results of a survey conducted on civil servants twice in December 2005 (649 respondents) and June 2006 (758 respondents) utilizing the SAR checklist revealed that on a one to five scale, a policy enhancement effect from a 3.11 to 3.40 was observed.

Table 3-1 SAR Checklist

Policy Stage		Check Item (19)
I . Formulation	1. Policy necessity	issue status / cause and immediacy / policy response / case studies and reference
	2. Policy establishment	policy objective / implementation requirements / feasibility and implementation plan / consulting / conflict management and effect analysis review
II . Promotion		subject and target / core message / promotion medium, time method / anticipated criticism and response / response to public opinion
III . Implementation		policy monitoring / implementation measures
IV . Evaluation and Feedback		subject, target, time and method of evaluation / evaluation results and implications / utilization of results

Ministry of Maritime Affairs and Fisheries

Edu-ship is a discussion community reflecting the image of the Ministry of Maritime Affairs and Fisheries (MOMAF). Edu-ship provides an online learning community in which the ship operating system implemented in the five great oceans is applied to a learning organization. Edu-ship is comprised of a learning organization called a ‘ship,’ a learning leader called a ‘captain,’ participants called ‘crew’ and an edu-room called a ‘cabin’ where subject-based debates take place. Mileage points are granted to participants according to activity performance, and the points are used to determine rank and promotions spanning from ‘deck hand’ to ‘number one navigator.’ In addition, Edu-ships that display poor performance in the learning activities are ‘sunk,’ and crew members that maintain low performance are disembarked. Thus, negative reinforcement factors such as the penalties are incorporated with positive reinforcement factors such as mileage points to build motivation. 3,571 employees comprising 87% of the total are participating in 58 Edu-ships, and the results of the program are archived in over 500 navigation logs each year. In 2006, 510 reports were produced as a result of Edu-ship activities, of which 117 (23%) were reflected into actual operations, contributing to enhancing the quality of government policies.

Korean Intellectual Property Organization

As the agency in charge of evaluating and registering intellectual property applications and resolving patent conflicts, the Korean Intellectual Property Organization (KIPO) is arguably the most representative knowledge-based administrative organization in the Republic of Korea government. The main characteristic as well as core strength of KIPO in pursuing knowledge-based administration is the exchange of knowledge with outside organizations. When KIPO formed a cooperation agreement with Korea’s largest private portal site, it became possible to disseminate patented knowledge, increasing the number of patented knowledge users by six-fold. The KIPO network was connected to the knowledge management systems of 11 research organizations, facilitating the exchange of useful knowledge. In addition, 7,000 people have benefited from 30 training programs KIPO has been operating to help scientists and engineers utilize patented knowledge.

Busan Metropolitan City Government

Busan has decided to build a new knowledge network as a measure to enhance the quality of public services through knowledge sharing. In line with this goal, the Busan government established a “city-district integrated knowledge network” in 2006, which has been in service since March 2007. The new system has created an environment for sharing knowledge among 15,000 people in 16 districts, while at the same time enabling district offices to utilize the quality administrative knowledge accumulated by the Busan Metropolitan City Government throughout the years. Busan is transferring know-how on knowledge-based administration to the lower levels of regional government that have experienced

significant difficulties in pursuing knowledge-based administration. As a result, the gap between the municipal and district offices is narrowing, presenting a model example of municipal government innovation. In addition, the collaboration between Busan city and district offices is enabling the joint utilization of information and standardization of administrative processes, playing a central role in enhancing customer satisfaction.

4. Conclusion – Outstanding Challenges

As observed in the previous chapters, the Republic of Korea government has exerted various efforts to build public trust in the government by enhancing the quality of policy and administrative services through knowledge-based administration. However, by limiting ‘knowledge’ which is the core enabler of knowledge-based administration to the confines of government, the level of trust the government receives from the people is also being placed under the same limitations. The public will have stronger trust in a government that engages in interactive communication, rather than one that exercises the exclusive production and provision of knowledge. Transcending the boundaries between various groups such as the general public, private sector experts, foreign governments and international organizations to achieve a diversified exchange of knowledge and communication, will be an important barometer to demonstrate the Republic of Korea government’s position as a trusted member of the global community.

The Republic of Korea’s efforts towards international knowledge exchange began in the private sector. Since the year 2000, the Maeil Business Newspaper, which is one of the largest business newspapers in the Republic of Korea, has been holding the ‘World Knowledge Forum,’ bringing together the world’s greatest minds in various fields to seek a solution for global prosperity. Seven Forums have been held to date, through which world-renowned personalities in academia, business, politics and media including Paul Krugman, Lester Thurow, Joseph E. Stiglitz, Robert A. Mundell and Bill Gates have presented visions for the new millennium through knowledge cooperation. The World Knowledge Forum 2007 which will be held this October under the theme of “Wealth Creation & Asia” will once again provide a venue for world scholars and opinion leaders to come together in search of a joint response to global issues such as the digital divide, regional conflicts and environmental degradation.

Emphasizing the importance of ‘knowledge’ means acknowledging the higher level of wisdom that emerges from a collective ‘we’ in comparison to an individual ‘me.’ Advancement is not possible through the experiences and knowledge of one person alone. When people share knowledge to create new knowledge, the utilization of that new knowledge is what fuels creative ‘innovation.’ The 7th Global Forum on Reinventing Government holds great significance in this respect. Localized experiences and case studies of innovation in diverse fields of each country have been shared to generate a larger, more creative form of innovation, making the world a better place to live.

As the person in charge of government innovation in the Republic of Korea government which includes matters of knowledge-based administration, it is truly a pleasure to have the opportunity to host the Knowledge Management Workshop together with UNDESA, where we have the opportunity to hear your valuable opinion and engage in active discussions. It is my hope that this precious gathering will not end as a one-time event, but will develop into a continuous network. In this light, it is my honor to take the opportunity to propose the establishment of a tentatively named ‘Community of Practice for Global Knowledge-based Administration Cooperation.’ The integrated government knowledge management system under development in the Republic of Korea can be used to build a systematic foundation for global cooperation. If we are able to continue this practice of sharing and utilizing the valuable knowledge possessed by each country in the form of knowledge management experience and case studies, the value of knowledge can achieve unlimited growth. In this respect, I believe that knowledge is intrinsically different from other goods because it is not “rival” in consumption. Knowledge only grows with sharing, and can be a fundamental base for the creation of new knowledge.

PUBLIC INFORMATION NETWORK AS COMPUTING AND E-GOVERNMENT INFRASTRUCTURE IN DEVELOPING COUNTRIES

Dr. Ai Viet Nguyen

Abstract

The issues related to Public Internet Access Development at the national scale in developing countries are discussed. Such program must have at least four components: infrastructure, public access points, a public information network and training to guarantee the utilization of the invested facilities. Necessary conditions of the successful implementation of each component are also investigated. The heart of this development program is the Public Information Network, which becomes a cooperative environment for government agencies, local governments and businesses to provide the information content services to serve the community. Such a large scale program will significantly pave the way to E-government and push the State Administration Management Computerization activities from their stand-still state. Among the numerous valuable on-line services, the program can facilitate a large grid computing infrastructure to improve the national computing power. Thus, a developing country can have equal opportunities to develop the advanced scientific research projects and services, which require high performance and still not affordable computation facilities.

1. Introduction

Since the early days of the Internet, the theoretical studies and small scale pilot projects funded by FAO [1-4] have proven the role of the Internet in the socio-economic development of the developing countries. People must have Internet access and know how to use it before they can enjoy the benefits of E-government applications. Trust in Government must be built on the services, which address directly the people's daily life, such as health, the economy and entertainment. Lacking social awareness and support, the E-government activities cannot resist the internal criticism and can fail.

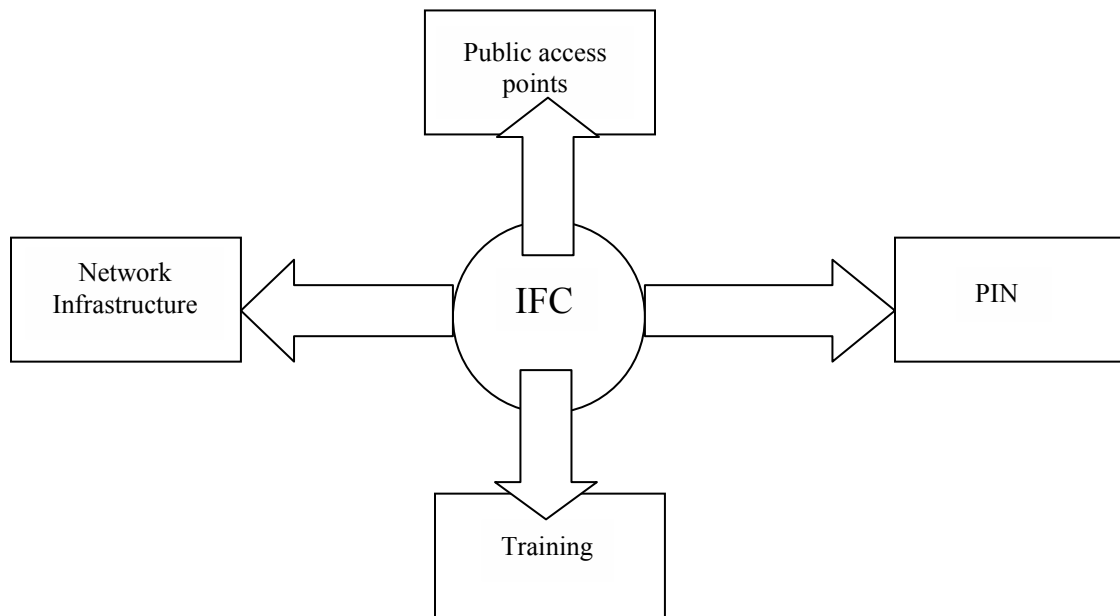
In developing countries, the economic structure is not mature enough to allow the private sector to build such large and sophisticated content portals like AOL, YAHOO, GOOGLE. On the one hand, the companies are not able to mobilize a large amount of investment to build such portals. On the other hand, the market does not appreciate such investment yet. Without contents, there is no incentive for people, especially in rural areas to the frequent use of the Internet. So, the government's initiatives will have an important role in building such facilities. In fact, government investments are vulnerable to many weaknesses in sustainability and efficiency. A few special measures must be taken to cure these weaknesses. In this paper, the measures worked out for the recently started national project "Internet for Community" (IFC) of Vietnam will be discussed. Hopefully, a few lessons can be shared for other developing countries.

2. The four component model of the IFC

In our model, in order to achieve significant effectiveness, the Internet for Community program in developing countries must deploy the following four components in parallel:

- The network infrastructure.
- The public access points
- The public information network (PIN)
- The training program

This model is depicted in the following figure.



Network Infrastructure

Network Infrastructure is the very basic necessary condition for Internet access. In the less profitable rural areas, the network service providers are not interested in deploying Internet access facilities as the market does not justify the investment.

The most important issue is how to choose the appropriate network technology. According to the financial lender JBIC, the narrow band dial-up access via the copper line is perfectly enough for the need of rural areas in Vietnam as the life standard is still low. One local network service provider has proposed ADSL as alternative.

However, the Project Preparation Unit has decided that Internet access in rural areas must be broadband. The reason may lie in the fact that the simple farmers do not have enough skills to use the text-based applications. They prefer the visualized and multi-media based applications, which require much higher bandwidth. This situation explains the discontinuous gap in Internet development: After the Internet; It takes time for the Internet to expand in the rural areas, after having reached maturity in the metropolitan areas On the one hand, people in the rural areas cannot afford the broadband Internet, but they are not interested in the dial-up Internet access, which does not have enough bandwidth for media based applications. So, the Internet access infrastructure in developing countries must be supported by the government.

The special conditions in Vietnam allow the optical network to be the preferred choice of technology. In Vietnam, the market has been open for only a few years, and all the service providers are focusing all their efforts to gain market shares in the mobile phone service. By pouring huge capital into the fiber optical networks, three major service providers VNPT, Viettel and EVT have been expanding their national and provincial fiber optical rings to cover all the districts. The total national bandwidth has far exceeded the actual needs. All these networks can be converted to an IP network easily and expanded into all the communes.

From an economic point of view ADSL is not a good choice in rural areas as from 2009 all the networks in Vietnam will be IP based NGN one and ADSL will be obsolete. In such a short-time, the market in rural areas cannot justify the investment. Based on the geographic conditions, additional technologies like WIMAX and WIFI can also be used.

The Network of Public Access Points

The public access point is very important for Telecommunication service popularization in rural areas in developing countries, where the PC penetration is still low. Even in advanced countries like United States, the public libraries are used as the public Internet access points.

In Vietnam, there exists a network of Communal Post Culture Points (CPCP). Currently in almost all the communes in Vietnam, there is a house where people can come to read newspapers and use the basic post and telephone services. However, the quality of CPCP's is not the same. In many places, the sustainability of the operation of CPCP is questionable as the utilization level is low; the revenue is not enough to pay the staff.

On this issue, the Project Preparation Unit has addressed the two following points:

1. The public access points must form a national network. The Internet will connect these points. If these points are connected it will become a profitable asset. The network can be used to do retail distribution, utility fee collection, life insurance sale, etc. Gradually, there must be extension service firms who employ the staff at the public access points. So the activity of the staff must be outsourced to the private firms.
2. There must be competitive public access points as CPCP's are owned by one company VNPT. Other telecom service providers can choose schools, community learning centers, community health centers and people committee headquarter offices as alternative.

Once in each commune, there is a public access point, based on the local conditions, the local government can decide to build more public access points with a small additional investment. In the initial stage of the project, each public access point should have at least five PCs, one printer and necessary appliances.

The Public Information Network (PIN)

As mentioned previously, in developing countries the content portals must be built by the government initiatives. In Vietnam, PIN will be initialized by three portals of three ministries and 5-10 portals of provincial local governments. Other ministries and local governments will participate in the next phase of the IFC project.

The central portal is built by the Ministry of Post & Telematics, which will provide at least 20 million free e-mail accounts, upload storage space and multimedia services. Connected to this central portal, the portals of the Ministry of Health and Ministry of Agriculture and Rural Development will provide online health and rural development services. These services address the most urgent needs of people in Vietnam. In the future, the Ministry of Education, the Ministry of Natural Resources and Environment and other ministries will also participate to serve the different needs of the people. The portals of provincial local/governments will also be connected to the central portal to become a public information integration place for different Departments in one province. So these portals will form a Public Information Network (PIN) to serve the citizen alongside the CPNET, the specialized data network for government to serve the government officers. These two networks will be the basic infrastructure elements of E-government in Vietnam.

So, the Ministries can use this network to send information conveniently. Prior to the installation of PIN, it would take a few weeks to send the paper reports from the commune to the Ministry of Health via many administrative levels of district and province. It would also take a few weeks to send back the instruction

from the Ministry of Health to the provincial Department of Health and then to all the related districts and communes. Via the PIN, the reports and instructions are sent and posted immediately in 48 hours.

In the future, all 64 provinces and 50 public agencies will have public information portals connected to PIN. Businesses can also connect to this network to provide their services. Essentially, public and private sectors can cooperate in this network to serve the people with initial steps taken by government.

One issue that must be addressed is the continuous information provision and maintenance of these portals. Government investments have weaknesses in keeping the invested system in operation effectively. The project preparation unit recommended that parts of these IFC portals' operation must be outsourced to the firms to provide E-commerce services. Usually, there is no clear boundary between E-government and E-commerce. The combination of the two will help to solve the sustainability of the services.

The Training Program

The training program consists of three components:

1. Training of users: The users in rural areas need training, propaganda in multimedia, and success stories to get acquainted to the Internet use. That can be done by short courses, events and frequent onsite help desk advice.
2. Training of assisting staff: There will be a permanent staff member at each public access point. In addition, volunteers can also participate in the help desk activities. They can be students, social activists and NGO people. They need to be trained to provide good quality services.
3. Training of the expansion service firms: Without a network, the isolated staff will be difficult to maintain. Business people can be encouraged to form expansion service firms in several communes. Groups of staff in 10-20 communes can be formed. They can provide different services. Government can build the business model and provide training to business men to encourage them to open these firms.

3. E-Government in Vietnam

In Vietnam, the state computerization program in the period of 2001-2005 has terminated without final results. A lot of people perceived it as a failure. There can be many reasons and a lot of lessons can be learned. However, one lesson is obvious: while the government officers don't support the program as a natural attitude, the public awareness of it is low. Without the social support the program will not likely be a success.

To generate a good image is very essential by providing services. So the good strategy must start from the services but not from the infrastructure like databases and internal applications. Aside the services like the information system for the leaders, the public information network will provide the important necessary conditions for E-government in Vietnam. As E-government's purpose is to provide online services to people, people must have access and be attracted to the Internet first.

The computerization and deployment of internal government ICT infrastructure can be carried out according to the demand of public service quality improvement.

4. National Grid Computing Platform

One nice thing about the IFC project of Vietnam is that the national computing power can be built due to a newly emerging computing technology paradigm: the Grid computing. This technology has achieved maturity recently and has brought with it a new opportunity for developing countries to build their national computing powers. The Grid computing is a technology to build virtual supercomputers by utilizing unused resources on connected PCs.

In the project IFC, there will be many PCs at the public access points and many servers of PIN. These computers are connected by Internet and the utilization rate is not high except during the evening hours. The PCs at the public access points don't require much data security. Therefore, these PCs will provide a huge opportunity to build supercomputers.

These supercomputers can help to improve the content provision on the PIN itself, but can also help other social, economic, technical and scientific areas' development.

Once the powerful supercomputers can provide software services online, it can also provide cheap PCs for the people in low income rural areas. This will help to bridge the digital divide.

In Vietnam, the government is trying to build the citizen trust by bringing them direct benefits.

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KNOWLEDGE MANAGEMENT AND TRUST IN GOVERNMENT: LESSONS FROM SOUTH AFRICA

Professor Fanie Cloete

...the creation of an inclusive and development-oriented Information Society is in the best interests of the majority of humanity, because most of the peoples of the world, especially from the developing countries, are confronted by the challenge of exclusion in the context of the global economy, in whose development modern information and communications technologies (ICTs) play a vital role.

President Thabo Mbeki
World Summit on the Information Society (WSIS)
Tunisia, November 2005.

Abstract

This paper started out with the assumption that a citizenry well-informed about the policy problems identified by government and about the government's strategies for dealing with those problems would potentially have more trust in a government if those strategies are perceived by the citizens to be the best to protect and promote their interests under the circumstances. The interaction between government and citizens on the basis of this information and the responsiveness of government to optimize its public services delivery outputs and outcomes within the constraints it faces, has the potential to improve trust in government. The level of detail that is needed in these processes differs from situations where literacy levels are high to others where low literacy levels exist.

Knowledge management through e-government is institutionalized in South Africa across all three governmental spheres in the country, and is progressing well according to various assessments so far. The constraints identified are technical and implementation-related. Clear lessons can be learnt about what has worked so far and what not. The results of these experiments have significant positive implications for the successful application of e-government strategies in developing countries, if these strategies are implemented in appropriate ways.

Effective electronic knowledge management requires the availability of accurate, reliable and timeous quality information about such operations, in order to maximize transparency which is a core ingredient of social trust in government. Although it seems that strategies and legislation adopted to set up an efficient and transparent public administration and to eliminate corruption and promote ethical standards in South Africa are indicators that measures might exist to ensure transparency, these measures are still flawed and need to be improved.

1. Introduction

In this paper I intend to assess selected recent developments in electronic knowledge management through e-government in South Africa that might have a positive impact on building trust in government through improved knowledge management in this country.

I start by operationalizing the relationship between knowledge management and trust in government. That is followed by an assessment of the lessons one can learn from the South African experience so far by looking at two important variables influencing this relationship, namely the implementation of knowledge management through various strategies of e-government and access to and transparency of information.

2. The relationship between knowledge management and ‘trust in government’

The background aide-memoire for this workshop states that:

...(b)uilding trust is the foundation of good governance....Throughout the world today, however, including both in developed and developing countries, there has been a significant decline in public trust in government... It is therefore critical to find ways of alleviating this declining public trust in government. There are several governance and institutional components that promote trust. The effective management of knowledge is one such component.

Trust refers to a specific attitude. It refers to full acceptance of another person or institution’s decisions or actions. Trust in government causes individual citizens to acquiesce in the decisions and actions of the government in that society. It therefore promotes democratic stability and facilitates the interaction between government and society. Trust in government is one of the attributes of good democratic governance.

Trust can be based on the following different driving forces:

- **Psychological instinct:** This refers to the trust of small children in parents or of followers in a charismatic leader for guidance, protection or assistance based on instinctive, emotional judgments. Trust driven by these forces is based on emotional instinct, largely irrespective of facts and figures.
- **Value-based faith:** This refers to the trust of religious believers in a Deity for assistance, absolution or salvation based on strong religious beliefs, or trust in the truth of ideologies like capitalism or Marxism, also largely irrespective of facts and figures, and
- **rational knowledge:** This refers to trust in someone or something because you know it will work from knowledge or experience, therefore mainly based on subjective perceptions of facts and figures. It includes the trust of citizens in their government for protection, regulation, growth and welfare services to enable them to develop themselves and live their lives as they choose to do, based on their subjective ideas and perceptions of what is possible as well as on their own judgements of what is the best for them. Rational knowledge-based trust therefore also has its share of affective and normative drivers, but it is an attempt to establish a more objective and empirical basis for judgment.

I interpret the objective of this workshop to be mainly about rational, knowledge-based trust in democratic government. The main underlying assumption behind knowledge-based trust, is that accurate knowledge, reflection, understanding and insight about different variables that have a bearing on a government’s procedures, policies and actions, could lead to more trust in government and therefore acceptance of what that government does. Trust therefore implies agreement with and acceptance of democratic governmental decisions and actions.

Conflicts and low voter turnouts in democratic elections, dissatisfaction with service delivery levels as well as potential political instability in democracies across the globe have lead to various questions about trust in government (eg Bouckaert & Van de Walle 2003, Kampen, Maddens & Vermunt 2003). These phenomena frequently occur in societies where allegations of corruption, mismanagement and dissatisfaction with the outputs of governmental activities are prevalent. Bouckaert, Van de Walle, Maddens & Kampen (2002) dealt with various explanations of trust in government. Kampen, Maddens & Vermunt (2003) could not prove that objective increases in the quality of public services have a direct positive impact on trust in government. Despite this verification problem, it can be hypothesized that improved knowledge in society about governmental processes, decisions, policies and actions should be able to improve trust in government if those policies, processes, decisions and actions are subjectively judged as acceptable by the populace in general, despite the fact that from an objective point of view such

processes, decisions, policies and actions might not in fact be of better quality. This statement factors in the contributing emotional and normative elements of rational knowledge-based trust.

The advent of the information society has for the first time in history made it possible that comprehensive and free flows of information might be created between governments and their populations. Knowledge is increasingly digitized and the United Nations and other international development agencies have all accepted and migrated already to electronic platforms for development. If the theory of knowledge-based trust is correct, distrust in government should in fact be increasingly declining as more information becomes available and transparent about governmental activities and governments. The logic of the argument is that these governments would be trying harder to please their respective citizenries because they can be increasingly held accountable to the public for what they do or don't do.

This conclusion, however, assumes that the outputs of government are optimal and that citizens would be satisfied with these outputs. This is a dangerous assumption that does not take full cognizance of basic driving forces of human nature that might lead to errors of judgement in government, group think, personal greed, fears, ambitions, etc, resulting potentially in rent-seeking behaviour by government institutions and continued perceptions of corruption, mismanagement and bad governance in general in the eyes of the populace or specific segments of a society. It also does not factor in the ability of society to make use of the increased user-friendly flows of information that become available to it. The so-called digital divide within a country between computer literate and computer illiterate classes in that society might in fact increase distrust in government rather than decrease it, because of the perceived benefits that digital haves may have to the detriment of digital have-nots. There is therefore no direct and inevitable correlation between better knowledge management and increased trust in government. Subjective perceptions of citizens that might not necessarily have a basis in fact are intervening variables in this regard. Higher trust in government occurs as a result of changes in the collective perceptions and opinions of the populace about the role of government in that society. These changes can be facilitated by the provision of higher quality information to citizens about governmental problems and strategies and more successful persuasion efforts by government on the basis of this knowledge and insight.

Various conditions for success must exist before one can expect that improved knowledge management might lead to more trust in government. These conditions include the following issues:

- The processes as well as the content of governmental interventions must be appropriate to fulfil the government's responsibilities to protect, regulate, develop and care for its society in such a way that its citizens are satisfied.
- If a democratic government cannot fully satisfy the procedural or substantive demands or needs from its society, (which is frequently the case in the face of resource constraints), it should be able to explain to its citizens why this is the case, and suggest a process how to make progress towards achieving policy goals over time. This implies a rational process of education and negotiation, leading to an agreement on the way forward.
- Such an agreement should then result in a knowledge-based relationship of trust between government and citizen if the citizens perceive such agreement to be in their collective interest and abide by the government's decisions and actions.
- Knowledge-based interactions between government and citizen in the 21st century knowledge society are best achieved through electronic means. The creation of electronic capacity, knowledge repositories, interaction and transactional channels are therefore prerequisites for trust-building in contemporary society.

The provision of information to the citizenry about policy problems, policy objectives, resources, time scales, risks, costs and benefits, constitute the foundations of good governance. The interaction between government and citizens on the basis of this information and the responsiveness of government to optimize its public services delivery outputs and outcomes against the background of the constraints it faces, has the potential to improve trust in government. The level of detail that is needed in these

processes differs from context to context. In a situation where literacy levels are high, optimal knowledge management systems designed to promote and facilitate the building of trust relationships with citizens can be extremely effective if they are implemented appropriately. In other words, where sufficient information can be made available and where opportunities exist for the government to interact with its citizens where necessary, community support can be sought by government. If government can persuade its citizenry in this situation that it is pursuing the best possible options, and if general consensus about this develops, democratic stability and trust should be high. The use of mass media like newspapers, radio, TV and these days also increasingly the Internet, for purposes of effective knowledge dissemination and management, can be extremely useful in order to communicate with citizens to attempt to consolidate community support for government actions.

Where social and electronic literacy levels are, however, low, it is much more difficult for a government to explain coherently to a relatively unsophisticated populace what the constraints are that it faces and how it intends to respond in that situation, especially if modes of mass communication are also weak or in some cases non-existent. These conditions exist in many developing countries, where illiteracy is high and the exposure of citizens to other mass media normally low. This means that general communication between government and society is fragmentary and weak, and that dissatisfaction that might develop in segments of society and that might result in lower trust levels in government, might not be addressed effectively.

The advent of the information society has made it theoretically possible for governments even in developing societies to make use of the Internet for purposes of maximizing trust in government through effective knowledge management, if citizens could access such information, internalize it, reflect on it and then decide whether they accept their government's proposed strategies to deal with its perceived policy problems. In order to do this, however, government has to empower citizens by creating a critical degree of electronic literacy in society for this purpose, establishing reliable electronic network channels to the community for purposes of knowledge dissemination and interaction, as well as within its own back offices in order to manage these processes effectively, and being responsive to views in society that might threaten to destabilize trust levels in government (eg Alexander, Maumbe & De Tolly 2006). This in fact implies a successful migration to an electronic standard of public services delivery (see UNPAN 2005).

3. Electronic knowledge management

The first step to improve trust should therefore be a dedicated attempt by government to improve not only conventional literacy levels in government as well as in society, but especially electronic literacy skills. This necessitates the electronic empowerment of citizens and officials by overcoming the negative impact of the digital divide. This implies the creation of appropriate electronic communication systems accessible to all at the various levels required, as well as educating the public and government officials on how to use these systems. This is a tall order, because it necessitates a paradigm shift in government thinking and practice about public services delivery and government spending priorities.

The **digital divide** is conceptualized here as a skills and resource access gap between digitally literate and digitally illiterate classes in society and among societies (see also Warschauer 2002, Chen & Wellman 2003:2, bridges.org 2004:4 and Fink & Kenny 2004:1). The digital divide is not a new phenomenon. Just the digital element of the various divides is new. It further does not only exist between fully developed and developing states, but exists even within highly developed countries (bridges.org 2004). *"There is not one digital divide; there are many divides"* (Chen & Wellman 2003:2). It has created a new class of illiterate citizens in every society. Many elderly people in all societies are electronically functionally illiterate while younger people (even in developing countries) are becoming increasingly electronically literate. This phenomenon has significant implications for government and development.

Technology as the basis of the digital divide can, however, also facilitate the achievement of functional literacy if it is used optimally (for example the uncontested role of technology in self education and distance education in developing countries, eg OECD 2003, Ingle 2003, Digital Opportunities Initiative 2004). Technology is therefore both a strength and a weakness for purposes of development (eg Sciadas 2003). Contrary to general wisdom and certain findings (eg Chen & Wellman 2003:24-25), the digital divide is according to a growing number of experts, not expanding but in fact slowly closing:

...in relative terms developing countries show faster rates of growth in network development than developed countries. This suggests that at present ICT growth rates, the developing world would eventually catch up to the developed world, in absolute levels. Moreover, when employing a per-income measure of access to a variety of ICTs, we find that developing countries already 'digitally leapfrog' the developed world. (Fink & Kenny 2004:1, bridges.org 2004. See also Sciadas 2003).

The main reason for this gradual decline in the digital divide, is the inevitable exposure of young children even in developing societies, to technology. As they grow up, become increasingly e-literate and get accustomed to the use of technological tools to facilitate life for them, they accept the digital society as a given and expand their use of such tools. This lack of built-in resistance to technological change that many adults face, even transforms into a demand by younger people for more technological improvements and functionalities, as they realize the benefits inherent in these tools to facilitate life for them further. The result is that even in lesser developed societies where technology is increasingly establishing a foothold due to the impacts of the global networked society, younger people in those societies are becoming increasingly digitally literate (in many cases this result is self-taught – Ingle 2003). This probably happens at a faster rate than the rise of digital literacy among older people in established industrial countries in Europe and North America. The digital divide is therefore in many respects the great equalizer between developing and developed nations.

Technology can, however, also be a serious impediment to development. Costs can sometimes be prohibitive, while low levels of general literacy and a lack of appropriate levels of technological infrastructure, expertise, commitment and resources, have also proved to be significant obstacles to technological development, especially in the developing world (UNPAN 2003, bridges.org 2004:7-8, Cloete 2005). The combined effect of still-developing technologies, a lack of a critical mass of technological infrastructure and the insufficient appreciation of the utility of such instruments, referred to above, has resulted in a situation that is not at the moment fully conducive to widespread adoption of electronic management assessment support tools in governments across the worlds, even in countries regarded as leading e-government advocates (Cloete & Needham 2002). The situation in developing countries is even worse. The inappropriate use of technology has caused many developmental and e-government projects to fail in the past (egov4dev 2003). UN-DPADM (2003) details the view from the UN in this regard, while Heeks (2002) assesses the promise and practice of e-government in Africa, and Bhatnagar (2000) the experiences in Asian countries.

Despite these implementation problems, international standards of management, service delivery and even democratic engagement with citizens are increasingly based on a seamless integration of electronic technologies into mainstream traditional governance processes (Bellamy & Taylor 1998, Heeks 1999, Spletstoeser & Kimaro 2000, UK 2002, OECD 2003). In many cases technology-based services like distance education, electronic personal identification systems, Internet-based services, etc, may prove to be the only way in which those governments will be able to meet their own service delivery targets. These policy innovations are fast becoming delivery standards across the world (eg Wagner, Cheung & Fion Lee 2003). Developing nations cannot do without them if they want to provide sustainable good governance. The UN Social & Economic Council's Committee of Experts on Public Administration stated explicitly in its first report that public sector organizations should become learning organizations with the objective of exploring "...how to create a dynamic culture that could be conducive for the developing countries to

'leap-frog' over stages of development and to reap more rapidly the benefits of a nascent knowledge economy" (UN-CEPA 2002:6. See also UN-HDR 2001).

4. E-government in South Africa

The South African government has also accepted the imperative of e-government as a platform for future public services delivery. The Minister of Public Service and Administration is responsible for the implementation of electronic government in South Africa, and the government has published a formal electronic government policy (SA-DPSA 2001). This policy is currently under revision and an updated version will be published soon. The e-government programme already started in 1999 with the goal to improve development by transforming the nature of the interaction between government and society from the current personal and paper-based modes of interaction into an increasingly electronic interaction. This is in line with international best practices. The focus is on the improvement of external public services to the public and to business and also on the improvement of the internal management of those services within government by focusing on improving productivity and cost-effectiveness through better interoperability of government services, information technology security, economies of scale and the elimination of duplication in the production and delivery of public services (SA_DPSA 2001). A comprehensive integrated life cycle approach to public services to be completed by 2014 has been adopted, which is also in line with other good international practices in this regard (see CPSI 2003).

The e-government transformation programme will be undertaken in the following traditional consecutive stages:

- firstly, a gradually increasing electronic information provision online while traditional service delivery approaches continue, followed by
- a more dynamic interactive and responsive communication capability between government and citizen,
- a third transactional completion stage, and finally
- an envisaged transformation consolidation stage where the emphasis will have shifted to a fully online availability of all facets of public services delivery that can feasibly be offered in that way.

Currently, the programme is still largely stuck in the first stage, although recent progress has been made at lower governmental levels towards the second interactive stage (eg allowing land owners who have submitted building plans to Johannesburg municipality to monitor progress with the approval of the plans online and to interact with the responsible unit to sort out obstacles in this process).

A high-level Presidential National Council on Information Society and Development (PNC-ISAD, <http://www.pnc.gov.za/>) drawn from top global and national industry leaders in the IT and development sectors, has also been established to advise government about the best way forward. In its latest draft report, the Council identified five priority focus areas for ICT applications. These focus areas are education, health, small, medium and micro enterprise (SMME) development, e-government in general and local content production for this purpose (PNC-ISAD 2006:30). In line with President Thabo Mbeki's quote at the top of this written manuscript, the two most important principles underlying the South African government's approach to the information society is the inclusive and developmental nature of government policy for the future (PNC-ISAD 2006:19). Specific strategies will be devised to address public awareness and motivation, digital empowerment, accessibility, affordability and disability (PNC-ISAD 2006:23).

The Pacific Council on International Policy's E-govt Roadmap for developing countries has suggested ten criteria against which one can measure progress with such programmes (PCIP 2002). Farelo & Morris (2006) applied this roadmap to South Africa and came to the following conclusions:

- **Why e-govt?** The envisaged migration to e-government in South Africa is for all the right reasons: social inclusion and development rather than only internal back office productivity and efficiency improvements.
- **The vision:** Vision 2014 of the PNC-ISAD comprises a comprehensive cradle to grave approach. Unfortunately an explicit focus on anti-corruption strategies is lacking.
- **The kind of e-govt:** A comprehensive G2G, G2C, and G2B focus exists, but an explicit internal back office G2E (govt to employee) focus is lacking. An increasing awareness of the importance of mobile-government is also in line with global trends.
- **The political will:** The existence of a dedicated Ministry responsible for e-govt, in the form of the Minister for the Public Service and Administration (MPSA), the prestigious advisory PNC-ISAD, the State Information Technology Agency (SITA) who is responsible for all planning, procurement and management of electronic needs in the South African public sector, and the coordinating Government Information Technology Officers Council (GITOC) are all indications of the political will to achieve the government's stated goals in this regard. Unfortunately it seems as if the portfolio of the Minister concerned is so substantial that her time to attend to e-govt activities is rather limited. The e-govt unit in that department is also a minor one compared to the other units in the department. The effectiveness of SITA and GITOC in implementing their responsibilities are also increasingly being questioned, as a result of less than satisfactory results over the last few years.
- **E-govt planning & management:** Various regulatory frameworks exist, controlled by the MPSA, SITA, GITOC, the PNC-ISAD, 9 autonomous provincial and 384 local governments. Central coordination among these initiatives can and should, however, be improved.
- **E-govt projects:** The main e-government-related projects include the national and provincial government gateway portals, the ambitious Home Affairs National Information System (HANIS), which is supposed to digitize the current paper-based National Population Register, and a number of multi-purpose community centres (MCPC's) and public information terminals (Pits). There is also a dedicated effort to introduce computer literacy curricula in all schools and communities (<http://www.khanya.co.za/>, <http://www.capetown.gov.za/smartcape/>). Progress with these initiatives is very slow as a result of current high levels of illiteracy in especially rural areas and serious band-width problems.
- **Private sector involvement:** South Africa has a very strong business IT sector, but PPPs can be improved and the government has taken an explicit decision to migrate as soon as possible to open source platforms and to encourage a similar migration in the private sector (despite the fact that one William H Gates is a prominent member of the PNC-ISAD).
- **Citizen participation:** As a result of the high electronic illiteracy levels in the country, this is still a weak area that needs to be strengthened significantly. The strong penetration of mobile phone technology in both urban and rural areas, is, however, an encouraging positive development in this regard that can lay the foundation for faster progress in this sector. Experiments with simple and user-friendly public kiosks that provide access to the Internet in deep rural areas have proved to be very successful (<http://www.meraka.org.za/digitalDoorway.htm>).
- **Resistance to e-govt:** Low levels of electronic literacy also complicate general community buy-in for e-government programmes. More attention should be given to improving access to, and the effectiveness of MCPC's. No open resistance to e-govt programmes, however, exist in South Africa.
- **Measuring progress & failure:** No systematic monitoring and evaluation system exists at the moment to determine progress with e-government programmes, but a general government-wide monitoring and evaluation system (GWM&ES) is in an advanced implementation stage (SA-PCAS 2005). This will enable systematic measurement of progress in future.

The main instrument of the SA government's e-government policy is the national governmental gateway portal South Africa Government Online (www.gov.za). This portal enables access to all governmental

services. In addition to the national governmental portal, all nine provincial governments have their own integrated portals. The PNC-ISAD has recommended (2006:122-124) that provincial governments should focus on:

- Broad and equitable **access** to the infrastructure (telecommunications networks) and tools (computer hardware and software).
- A significant and growing level of **skills** in the form of basic literacy, computer literacy, information literacy and business literacy.
- A significant and growing amount of digital **content** (information and the applications – like databases – that deliver it) that is locally relevant.
- The use of ICTs for the **internal administration** of government, and **the delivery of services**. This is essentially a more traditional IT strategy, though its major focus will be on improving the efficiency of government processes, and enabling government departments to co-ordinate and harmonize their activities.
- The use of ICTs to **communicate with citizens and business**; for example, giving information about and access to services; improving the reach and effectiveness of service delivery; enabling information and financial transactions; and fostering democracy through citizen participation. In doing so, government will also need to promote access to ICTs, so that everyone can benefit from the opportunities within the information society, thereby reducing the digital divide. Another aspect of this drive for better communication is the need for provincial government departments to better communicate with each other, and for different spheres of government to better communicate and exchange information with each other.
- The role of ICTs in bringing about **social and economic development**. Government must face up to its leadership role as a consequence of it being a major user of ICTs. Most of all this is about skills, but it must address the policy and regulatory environment, and ensure that the Province has the infrastructure to allow its people to compete effectively in the knowledge economy.

The best functioning provincial portals are those of the provinces of Gauteng (<http://www.gautengonline.gov.za>) and the Western Cape (<http://www.capecgateway.gov.za>). The Cape Gateway portal is probably the most comprehensive and advanced of all of these provincial portals (see bridges.org 2003, Cape Gateway 2004, the assessments of the Provincial Government of the Western Cape 2005 and De Tolly, Maumbe & Alexander 2006). It links the Cape Gateway Walk-in Centre, the Cape Gateway Call Centre, local government and other special projects to the Internet. It is available in English, Afrikaans and Xhosa, which are the three official languages of the province. In their assessment of the facility, De Tolly, Maumbe & Alexander (2006) found that it is still insufficiently developed to deal with the needs in that province. Other lessons that they have learnt from it include that the requirement to present it in 3 languages complicate the process tremendously, that more content is needed, that there is a need for centralized content management, a more solid technology base, more specialist skills, the development of a more dedicated e-culture, hard work, more financial resources, better access and a systematic monitoring and evaluation programme for it. They also stressed the strategic importance of m-govt strategies to optimize the functionality of the system.

The e-govt programme in South Africa also extends to the local community level, where it is probably even more advanced in some municipalities than at any other higher level of government. The best examples of this level of application are the big metropolitan governments in the country: Cape Town (<http://www.capetown.gov.za/default.asp>), Johannesburg (<http://www.joburg.org.za/>), Pretoria/Tshwane (<http://www.tshwane.gov.za/>) and Durban/eThekweni (<http://www.durban.gov.za/durban>). Cape Town is especially advanced, with integrated GIS based management applications that are comparable with the best in the world and are widely regarded as best on the African continent (Samuels 2005, Cloete & Needham 2002).

By September 2003 Cape Town City had established the largest local government-sector SAP installation in the world. It was the first local government in Africa to implement a fully-fledged ERP (Enterprise

Resource Planning) programme (Samuels 2005). In 2004 the city was awarded the Smithsonian Institute/Computerworld Honours Prize for its SAP-ERP project for being the most significant IT project in government and non-profit organizations in the world. Cape Town City also won the African ICT Achievers E-Government Award in 2003 & 2004, and the Bill and Melinda Gates Foundation Prize for technology projects (Samuels 2005).

The ERP System entailed a major upgrade of the City's computer and IT systems in a drive to improve overall efficiency and achieve long-term cost savings. It transformed the administration from an old-fashioned, over-the-counter-run system into a user-friendly, effective on-line operation. This ERP System enabled an integrated solution to managing financial, revenue, operations, human resources and other services on a single completely integrated IT system. The goals with the new system were a combination of cost-savings and efficiency improvements in order to generate funds for better longer-term service delivery to the public and personal and community empowerment in order to bridge the digital divide (Samuels 2005).

Other objectives were to facilitate activities in the informal business sector in order to contribute to job creation and social well-being. This was also highlighted at the 2003 World Summit on Information Society. The City therefore implemented its Smart Cape Access Project and a Digital Business Centres project, which clearly show that access to ICT, equals access to opportunities for all our communities, especially the less privileged. That was supplemented by the Kulisa Youth Development Programme, focused on equipping 130 youth from previously disadvantaged communities with an ICT technical skill to operate in the new economy. This programme is one of the largest learnership programmes in the country. Community empowerment was addressed through community computer literacy programmes and the establishment of computer work stations linked through electronic networks to the City and provincial library and school systems (<http://www.khanya.co.za/>, <http://www.capetown.gov.za/smartcape/>).

Two last illustrations of innovative electronic knowledge management practices that have worked well so far in South Africa to promote public awareness of services available as well as provide information, education, improved management and development, are the following:

The first is the so-called Hole-in-the-wall experiment in New Delhi (<http://www.niitholeinthewall.com>) that was translated into a replication of it in the guise of the Digital Door experiment in Cwili, Kei Mouth, in South Africa (<http://www.meraka.org.za/digitalDoorway.htm>). The experiment consisted of the placement of a multi-purpose, touch screen Internet kiosk in a public area in a deep rural village without any instructions for or training of potential users. The kiosk provided Internet access and had specific screen icons to game, music, educational and job-related sites. Within an amazing short time-span, youths and adults who are functionally illiterate in many cases taught themselves and each other how to use the system.

The second case refers to a totally illiterate but expert hunter-gatherer tracker of Khoi-San descent in a semi-desert area of the Kalahari Desert in South Africa, capturing crucial botanical and zoological information digitally on a GPS instrument and sending the information in real-time via satellite to a computer network for purposes of environmental management in a game park (Peacock, Douman & de Voux, undated). The GPS device has a touch screen with icons depicting animal spoor, plants and other relevant information on it (CyberTracker undated).

These two cases provide conclusive proof that sophisticated technologies can be used effectively for developmental purposes in extremely backward conditions if they are implemented appropriately.

5. Access to and transparency of information

The second prerequisite to improve trust in government is free and transparent access to the information content needed by citizens (see Cloete 2006).

- **Transparency** has been defined by some of the most authoritative experts on the topic as *'the increased flow of timely and reliable economic, social, and political information'* (Vishwanath & Kaufman 1999: 1). Defined in this way, transparency is the same as openness. The main supplementary conditions that create or stifle transparency are conceived by the same authors from the World Bank as access, comprehensiveness, relevance, quality and reliability (Vishwanath & Kaufman 1999:1).
- **Access** to information is defined as *'the ability of the citizen to obtain information in the possession of the state'* (Martin & Feldman 1998: 1). Transparency is therefore closely linked to the ability of all citizens to access the information relatively easily. This presupposes the existence of mass media that can freely operate and disseminate information to all and also appropriate literacy levels in all communities that make access to those media instruments possible. It also presupposes opportunities for interaction between citizen and government to follow up any query about an issue, and responsiveness of government to these queries (eg Nealer 2005:476). Democratic participation is therefore part and parcel of effective and transparent governance. Different strategies are followed by different governments in this regard: *'...some states provide for access in their constitutions and laws; many do not. Even where access is recognized, it is invariably subject to limitations. In addition, states may impose fees, and require the payment of administrative costs before citizens actually obtain the information they are seeking'* (Martin & Feldman 1998:1). These restrictions that governments place on the flow of information restrict the level of transparency.
- **Comprehensiveness:** Transparency can only be effective if all core aspects of a case are transparent. Any opaque activity can create a risk of collusion and bias towards special interests.
- **Relevance:** Similarly, information is only useful if it is relevant to the situation that exists. Volumes of irrelevant information can hide important issues in many cases, and is frequently used to divert attention away from crucial issues.
- **Quality:** Information must be authoritative and accurate. If not, it can only give an approximation of a condition, which leaves a too big margin of error to base important judgments upon.
- **Reliability:** Reliability refers to the consistency and replicability of quality information. The scientific rigour of the methodologies used to compile the information is crucial in this regard.

To conclude, transparency refers to the availability of information to the public on the transactions of the government and the transparency of decision-making processes. It involves ready access to reliable, comprehensive, timely, understandable and internationally comparable information on government activities and is necessary for sound government and good governance. Good governance implicitly guarantees the civil and human rights needed for effective ethical government by honest officials and the information flows that enable members of society to be informed on government activities. Two interrelated issues are inherent in this phenomenon. One is the nature of information and the other is the use of such information; the latter is largely dependent on the former. The general experience with regard to the nature of information is that information is provided to the public and the legislature. However, even when information is accessible and clear, members of the public may not voice their grievances and may "exit" because of their uncertainty about alternatives (Mbatha 2005:2).

Increased public confidence in government, minimizing financial risks and corruption and enabling sustained growth and development, empowering citizens and enhancing democracy are some of the positive consequences of transparent government (Kaufman 2005). Government secrecy is increasingly questioned throughout the world. Effective governance cannot take place when unnecessary secrecy surrounds decision-making processes and outcomes. Where suspicions of secrecy exist, these have a corrosive influence on public confidence in government. Vishwanath & Kaufman (1999:17) state that a

lack of transparency in public administration is a crucial constraint on policy implementation and its economic and social outcomes. Addressing this constraint remains a crucial means of promulgating a consistently successful public policy. A sine qua non for doing so is to improve transparency in public institutions and policy-making processes.

However, different systems have developed in different democracies to find a balance between full transparency and the protection of national security, competitive advantages and personal information. Vishwanath & Kaufman caution that the costs of full information disclosure might sometimes be too high for a government (eg unnecessarily panicking residents with ill-considered, untimely or premature disclosures of natural threats with a low probability of occurrence, or fully disclosing the bacterial contents of potable drinking water or the existence of hairline cracks in aeroplane wings that are within safety limits but might scare lay persons). The converse obviously also apply: In these and other cases the benefits of non-disclosure might be too high (1999:5). Both these situations may then lead to different degrees of non-transparency that might in certain cases even be beneficial to good governance rather than detrimental to it. The conclusion must therefore be that democratic transparency also has limits, and that beyond those limits more transparency may be contra-productive.

It is very difficult to devise a generic model of transparency that could be applicable in all contexts, because of different conditions, operating cultures and styles of governance in different countries. This can be illustrated by a brief comparison between the differences in governance processes between lesser and more developed societies. The high correlation between democracy and developmental levels results in governance being more transparent in more developed countries, although not in all cases. Transparency is directly correlated with the democratic nature of government. Consequently, lesser developed countries that are generally less democratic, experience much more extreme constraints on the transparency of governance processes than is the case in more developed countries.

One of the most promising new strategies to promote transparency is information technology in the form of integrated electronic and mobile government. E-government refers to the use of these technologies to promote better and more responsive relationships between government and its citizens (e-democracy) and improved development instruments (e-development) in the form of external front office public service delivery systems (e-delivery) and internal back office management systems (e-management) (eg Cloete 2003; McIvor, McHugh & Cadden 2002, EU 2005). E-government is increasingly used as the backbone of public management systems in more developed countries, and can contribute in a significant way to more effective implementation of transparency measures. The structural constraints of lesser developed countries, make this instrument more difficult to implement, but numerous experiments in and studies on the Republic of Korea, Singapore, Malaysia, Chile, Brazil, South Africa, Mexico and other emerging regional powers have indicated that it can and should be applied if governments in those countries are serious with improvements in developmental and e- service delivery levels in their respective countries (eg Davison et al 2000, Bhatnagar 2000 & 2001; Heeks 2001; bridges.org 2002; PCIP 2002; CPSI 2003, Cloete 2003).

6. Access to and transparency of information in South Africa

The interaction between the government and the public, the private sector and political and administrative institutions in the South African democracy takes a multiplicity of forms and is, in principle, complicated. After all, the heterogeneous public, government, parliament, provincial and municipal authorities and administrations, business sector, unions, political parties and community organizations, each has its own function and its own professional tendencies that sometimes become the source of controversy. They also often derive their power and authority from different statutory and other sources. Transparency, openness, access to information and justice and the disclosure of malpractice through legislation offer a channel through which the public can have input into government activities in the provision of services to the public. The public will not support democratic institutions that appear unethical, corrupt and

incomprehensible to them. This is all the more essential in South Africa's case, as the country emerges from apartheid rule where the majority of South Africans were actively denied to right to have access to information on the process of governing. No reminder is needed of the inherent danger this poses for a healthy system of democratic governance. However, popular support for democracy and its institutions on the long term is not, as is commonly assumed, expressed solely through the ballot box during elections. It also depends upon open and transparent practices and policies, as well as legislation to protect employees who disclose malpractice or misconduct in the work environment.

In their 1998 study, Martin & Feldman found that the South African case has a number of lessons that might be useful in other contexts. Many changes have occurred since 1994, aimed at the institutionalization of formal structures for openness, the disclosure of malpractice and transparency. South African legislation enacted since 1994 has attempted to enlarge the scope of transparency in the affairs of the public sector and to strike a balance between the provision of access to official information and the preservation of confidentiality where disclosures would not be in the public interest. Section 16 of the 1996 Constitution for example guarantees freedom of expression, including freedom of the press and other media, freedom to receive or impart information or ideas, freedom of artistic creativity, academic freedom and freedom of scientific research. Section 32 also provides an explicit right of access to any information held by the state and any information that is held by another person and that is required for the exercise or protection of any rights. This section also provides explicitly that national legislation must be enacted to give effect to this right, and may provide for reasonable measures to alleviate the administrative and financial burden on the state. Thus, there is not only a constitutional guarantee of access, but an obligation that the state gives practical assistance to persons seeking access (Martin & Feldman 1998). Three additional laws supplement these constitutional provisions. They are the Promotion of Access to Information Act (Act 2 of 2000), the Protected Disclosures Act (Act 26 of 2000), and the Promotion of Administrative Justice Act (Act 3 of 2000).

The most important document is the **Promotion of Access to Information Act (PAIA)**. It is intended to promote open and accountable administration at all levels of government. PAIA gives effect to section 32 of the new Constitution subject to justifiable limitations, including but not limited to, limitations aimed at the reasonable protection of privacy, commercial confidentiality and effective, efficient and good governance and in a manner which balances the right of access to information with any other rights including the rights in the Bill of Rights in Chapter 2 of the Constitution. PAIA establishes voluntary and mandatory mechanisms or procedures to give effect to that right in a manner which enables persons to obtain access to records of public and private bodies as swiftly, inexpensively and effortlessly as reasonable possible. It also promotes transparency, accountability and effective governance of all public and private bodies by empowering and educating everyone to understand their rights in terms of the Act, to understand the functions and operation of public bodies and to effectively scrutinize, and participate in, decision-making by public bodies that affects their rights (ODAC 2006, DoJ 2006a-c).

The act provides for the appointment of Information Officers in each public agency and the creation of a 'road map' manual containing important information about the role of that agency, including a description of the body, its contact details, how to obtain information from it and what records it has (SAHR 2006:18, ODAC 2006:6). Certain pieces of information should be available automatically, while other bits of information may be divulged on request. Requests must be made in a specified format and at specified fees. Information officers must assist requesters with their requests. The reasons for a request for publicly held information are irrelevant, because access to information is a constitutional right. Privately held information can, however, only be accessed for the protection or exercise of a constitutional right. An objectively determined 'need to know' must therefore be proved (Currie & Klaaren 2002:64).

Records of members of parliament, of Cabinet, the judiciary and legal proceedings that are in progress, are exempt from the Act (Currie & Klaaren 2002:52-58). Requests for access must be processed within 30 days. Access to information may be refused in the following cases, with adequate reasons for the refusal in writing:

- Privacy, confidential, research & commercial information of third parties (except when consent has been given, the information is already publicly available, if it pertains to information needed for medical care of a dependant or patient or to someone deceased for longer than 20 years, or relates to the position or function someone occupies or fulfils, or is needed for risk testing).
- South African Revenue Service records
- Safety and property of individuals
- Law enforcement and legal proceedings
- Defence, security and international relations of the Republic
- Economic, commercial & financial interests of the Republic
- Internal operations of public bodies
- Frivolous or vexatious requests, or substantial and unreasonable diversion of resources

Access is, however, approved if the harm that might be done in terms of the above list of exclusions is outweighed by a substantial contravention of the law, an imminent and serious public safety or environmental risk, and the public interest. Refusal to grant access may further be appealed, first to an internal appeal authority and later to a law court.

Provisions that were considered in the first Bill but were eventually not taken up in the current Act, include:

- Individuals' right to correct their own records, and compensation to be paid when injury results from inaccuracy in personal information held by the state and for other contraventions of the legislation
- The requirement that meetings of governing bodies of departments of state be open to the public.
- An Open Democracy Commission and Information Courts initially charged with implementing and overseeing the Act. These bodies were replaced by the SA Human Rights Commission (Currie & Klaaren 2002:8, Martin & Feldman 1998).

Martin & Feldman's comparative 1998 study concluded that:

(t)here is an established infrastructure for disseminating information. The official government printing service, responsible to the Minister of Home Affairs, publishes in English and Afrikaans. All legislation is published. Government publications, including attractive and simple to understand public information pamphlets, are freely available in public libraries and are also for sale from the government printer. Various government data are published on a monthly basis. Law reports are published regularly in the South African Law Reports series. There is an established library service including a mobile section. The government provides subsidies for this service and for radio and television services. Public affairs programmes and current affairs discussions are broadcast

Despite these detailed arrangements to promote transparency and access to information, the system is extremely rigid, cumbersome and difficult to implement as a result of the many formal procedures prescribed in PAIA and its interaction with other existing laws. The Act does not cover information that is not already contained in a record. The act also does not reverse other government secrecy and confidentiality legislation, and even though information might be accessed in terms of PAIA, applicants might be thwarted by other laws protecting the confidentiality of a specific request (Klaaren 2002). Many analysts are therefore of the opinion that transparency in the South African public sector runs the risk of being stifled rather than promoted as a result of this legislation.

The second important policy instrument to promote transparency in South Africa is the **Protected Disclosures Act (PDA)** that provides for procedures in terms of which employees in both the public and private sector may disclose information regarding unlawful or irregular conduct by their employers or other employees (eg corruption, maladministration, or the contravention of a law). The Act provides for the protection of employees from being subjected to an occupational detriment on account of having made a disclosure which is protected in terms of PDA (eg suspicion of criminal offences, failure to comply with legal obligations and a reasonable belief that the health or safety of an individual has been, is being or is likely to be endangered).

Camerer (2001) explains that:

(e)employees making such a disclosure are protected from occupational detriment like being subjected to disciplinary action, dismissed, suspended, demoted, harassed, intimidated, transferred against his or her will, refused transfer or promotion, or otherwise adversely affected in respect of his or her employment, profession or office, including employment opportunities and work security. The Act thus prohibits an employer from subjecting an employee to an occupational detriment on account of having made a protected disclosure. Should occupational detriment occur and is found to have been linked to the making of a protected disclosure, the bona fide whistle blower would be protected and the employer would not be allowed to dismiss or prejudice the employee for having raised legitimate concerns...

To be protected, a disclosure must either be made to a legal representative, an employer, a minister or provincial member of the Executive Council, a specified person or body (eg the Public Protector, the Auditor-General), or another body prescribed by the minister of Justice, or as a so-called general protected disclosure. Detailed special requirements are prescribed for each of these disclosures. Disclosures must be in good faith and existing internal mechanisms and procedures must be exhausted before disclosures can be made to outside agencies (Camerer 2001). Confidential hotlines may be used in certain circumstances.

The definition of protected information is narrow. The Act only protects the divulging of seven different categories information. They are (Klaaren 2002):

- a criminal offence,
- a failure to meet a legal obligation,
- a miscarriage of justice,
- danger to the health or safety of an individual,
- danger to the environment,
- unfair discrimination, and
- a deliberate concealment of any of the above cases.

At least three important categories of information fall outside the scope of the Act. They include ethical issues, professional issues that do not necessarily indicate an ethical issue, and matters of public concern (eg the functioning of a policy). The Act only covers disclosures when a legal obligation will not be met. The effect of this is that disclosures relating to potential changes in the law on public policy grounds are not protected by the PDA. Disclosures of information that are not protected by the PDA, might be protected under the PAIA discussed above, for example via the potential public interest override allowed in the PAIA, because that override can be activated by the threat of a substantial contravention of or a failure to comply with a law or by a serious and imminent public safety or environmental risk (Klaaren 2002). It is problematical that one act protects issues that are in the public interest, while the other does not. In contrast to the original intention of the Bill that resulted in this Act, whistleblowers are currently also not protected against civil and criminal liability (Currie & Klaaren 2002:10). This hampers disclosures under the PDA.

The way general ‘whistle blowing’ is dealt with in the PDA is therefore problematical. Whistle blowing in the normal sense of the term is not the same as an authorized disclosure of information in terms of the PDA. Whistle blowing entails the disclosure of information by an employee or ex-employee with regard to general organizational wrongdoing. The disclosure of organizational wrongdoing can be authorized or unauthorized. Authorized disclosure of information means that the disclosure was made in terms of the channels of communication laid down by management systems in place that assists the person who becomes aware of the information in knowing how and to whom the disclosure should be made. Unauthorized disclosure means that the disclosure was made outside the prescribed channels specified in the PDA and through external mechanisms even outside the organization (eg through the media). Whistle blowing in this way is an unauthorized form of disclosure and does not fall under the domain of protection of the PDA.

It is clear that despite the progress made with the promulgation of the PDA, serious flaws still exist in its scope and operations that do not contribute optimally to protection for disclosures of sensitive information in the public sector in South Africa in the public interest. This still restricts the promotion of transparency in this country significantly.

The third policy instrument for this purpose is the **Promotion of Administrative Justice Act** that gives effect to the right to administrative action that is lawful, reasonable and procedurally fair and to the right to written reasons for administrative action as contemplated in section 33 of the new Constitution. It supplements the previous two pieces of legislation and codifies for the first time Administrative Common law in South Africa. It will not be discussed in detail here.

The South African government’s commitment to e-government as a developmental and services delivery instrument will improve transparency (SA-DPSA 2001, CPSI 2003). Initiatives to integrate e-government into mainstream public management processes in the country are also in progress as explained earlier. These outcomes will have major positive implications for the promotion of transparency in the South African public sector.

7. Delivering the goods

The third and last prerequisite to improve trust in government is a willingness by government to interact and negotiate with citizens about a mutually acceptable process of making progress towards achieving agreed-upon policy goals for that society, and then to deliver on their promises and undertakings in order to maintain the trust relationship. This is probably the hardest to achieve, because it implies successful democratic politics and government. In other words, trust in government can really only be consolidated by delivering the goods to the people. If this does not happen, a government risks losing the trust of the people and being replaced in the next round of elections by another government that is more trusted by the people to deliver on its promises.

At the moment many governments in developing countries further cannot meet the needs, expectations and demands of their citizens through their current service delivery programmes, for the range of traditional delivery weaknesses summarized above. As stated above, it is an open question whether any government that does not embrace the new technologies will be able to provide the required levels of services, compete with other service providers in an environment of open, global competition, or even survive as a government in future.

Governments that do not accept the emerging benefits of technology and still cling to their traditional delivery systems, face a very stark range of choices. The first choice is to attempt to improve their current, traditional policy implementation capacities and mechanisms to the extent that they will be able to meet the needs, expectations and demands in their respective societies sufficiently to stave off political instability and loss of power. In most cases this objective of good governance is beyond their capacity,

because of current systemic defects that they seem unable to reverse. Another complication is that the effects of globalization *inter alia* necessitate the closure of the existing digital divide between wealthy and poor nations – a requirement that is, in the short term at least, beyond the capacity of any government in a developing state to achieve.

The second choice they face is to accept the inevitability of insufficient performance and to try to stave off political instability for as long as possible, through increasing authoritarian actions and internal security operations, accompanied by an increasing lack of access to information and legal procedures and a lack of transparency of governmental operations. The course that the Zimbabwean government has been taking in the recent past is an illustration of this desperation to survive politically. This not sustainable good governance, but a recipe for national disaster.

The only feasible alternative for a government in a developing country to achieve good governance outcomes, is to accept the inevitability of the global technological revolution (which is as inevitable as the mechanization revolution of the 19th century), and to initiate, as soon as possible, appropriate general literacy and specialized computer literacy programmes to reduce the digital gap between it and the industrial world (See also Grindle & Hildebrand 1995), in order to establish new accessible and transparent electronic knowledge management networks to facilitate public services delivery along the lines of prevailing international practices. This implies a major paradigm shift in public policy and spending priorities to utilize technology optimally as a major policy instrument to facilitate the provision of basic services, and, simultaneously prepare the citizens to utilize these new empowerment opportunities optimally. This challenge does not only exist in the use of technology for development, but is a general requirement for any successful development initiative.

The argument so far is contrary to the conventional wisdom that technological change is not deterministic (eg UN-DPADM 2003:2). Determinism should, however, not be confused with irreversibility. The argument in this paper is that technological development is as deterministic as mechanization proved to be during the previous centuries, but that it is not necessarily irreversible (eg in situations of major social and political upheavals where regimes are overthrown and social, political and economic instability lead to dramatic reversals in knowledge and experience levels, developmental levels and resource availability).

8. Conclusions

This paper started out with the assumption that a citizenry well-informed about the policy problems identified by government and about the government's strategies for dealing with those problems would potentially have more trust in a government if those strategies are perceived by the citizens to be the best to protect and promote their interests under the circumstances. The interaction between government and citizens on the basis of this information and the responsiveness of government to optimize its public services delivery outputs and outcomes within the constraints it faces, has the potential to improve trust in government. The level of detail that is needed in these processes differs from context to context.

In a situation where literacy levels are high, optimal knowledge management systems designed to promote and facilitate the building of trust relationships with citizens can be extremely effective if they are implemented appropriately and if they are freely accessible to citizens. Transparency of governmental operations is increased through the availability of accurate, reliable and timeous quality information about such operations.

Where social literacy levels are, however, low, it is difficult to transfer detailed knowledge and interact on the basis of that knowledge. Transparency levels about governmental activities are in such cases also frequently very low. In the current information society, the most effective strategy to build knowledge-based trust by society in government, is to migrate to an electronic standard of knowledge management and public services delivery. This will provide higher levels of information and make government much

more transparent to the citizenry. The requirements to do this include creating an electronically literate populace with effective and accessible electronic networks and information content as well as an effective response by government to complaints from society that satisfies its citizens about the *bona fides* of government. It also implies open access to the information required by citizens for this purpose.

The most significant obstacle to the optimal use of technology in government, is not necessarily resource-related. It is a mental obstacle, namely an unwillingness to accept the inevitable impact of the global technological revolution on governance (Cloete 2005). Despite massive technological development aid that may be provided in future to developing countries that lag behind the technologically better endowed states, the digital divide will not be reduced if accompanying mental paradigm shifts are not made in such countries.

Knowledge management through e-government is institutionalized in South Africa across all three governmental spheres in the country, and is progressing well according to various assessments so far. The constraints identified are technical and implementation-related. Clear lessons can be learnt about what has worked so far and what not. These lessons are also relevant for other countries, especially in the developing world. The South African experiences and good practices summarized in this paper indicate that hi-tech solutions can be applied successfully in cases of extreme underdevelopment, in order to facilitate, and maybe even fast-track positive developmental outcomes. It also illustrates that a lack of general literacy is not necessarily an impediment to e-literacy & e-learning. The results of these experiments have significant positive implications for the successful application of e-government strategies in developing countries, if these strategies are implemented in appropriate ways. It is, however, too early to determine whether trust in the South African government has been increased as a result of the e-government strategies in the country

Effective electronic knowledge management requires the availability of accurate, reliable and timeous quality information about such operations, in order to maximize transparency which is a core ingredient of social trust in government. Although it seems that strategies and legislation adopted to set up an efficient and transparent public administration and to eliminate corruption and promote ethical standards in South Africa are indicators that measures might exist to ensure transparency, these measures are still flawed and need to be improved.

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KNOWLEDGE MANAGEMENT AS A STRATEGY FOR RECOVERING TRUST IN GOVERNMENT - THE MEXICAN EXPERIENCE

Mr. Abraham Sotelo Nava

Abstract

Knowledge Management (KM) is a tool for improving control over knowledge in organizations, supporting their processes and functions. Knowledge, explicit and tacit, is distributed in the organization, for exploring it and aims to generate a competitiveness oriented value. It is necessary to design KM strategies and implement Knowledge Management Systems (KMS) that position knowledge as a strategic asset in the search for efficiency and transparency in governments, recovering the citizen's trust in them.

The objective of this document is to show how the Mexican Government has followed a path for achieving important goals, and also to allow us to evaluate the achievements of this path, as well as recognize the missing needs for developing a knowledge based and transparent government, that includes its peers and citizens for exploring existing knowledge and generating new one, towards achieving social benefit and development.

1. Introduction

According to OECD (2003) at the end of the 20th Century, deep changes in economies occurred that led all types of organizations to rethinking the strategic nature of resources and abilities that provided advantage. Thus, the resources now comprise intellectual capital which includes intangible goods as the knowledge.

In the New Economy, knowledge is seen as a resource for innovation, and thus, its management has developed as a strategic action for increasing competitiveness, generating efficiency and benefiting society as a whole. Knowledge Management (KM) allows knowledge to be used, delivered and acquired at the lowest cost for a specific context.

Knowledge is a renewable economic good and Information and Communication Technologies (ICT) allow its exploitation for generating new value. Using these technologies it is possible to access, use, analyse and share knowledge. Davenport & Prusak (1998:5) define knowledge as follows:

Knowledge is a fluid mix of structured experience, values, contextualized information and expert ideas that provide a structure for evaluating and incorporating new experiences and information. It's originated and applied in the mind of the experts. In the organizations it is present not only in documents and deposits, but also in procedures, practices and norms.

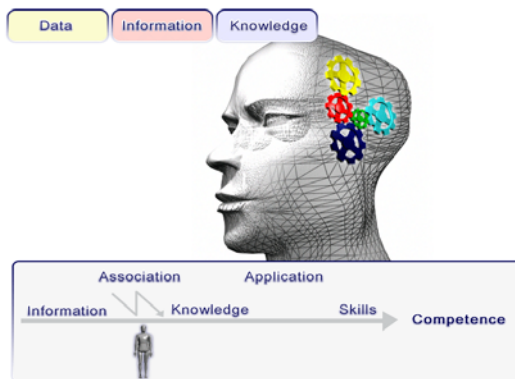
While there are numerous subtly different definitions of KM, they all share three common features. Firstly, "KM is an organizational strategy to enhance its competitiveness. Secondly, it is a systemic process of leveraging the organization's intellectual assets. And thirdly it involves the process of identifying, capturing, sharing and creating knowledge¹.

¹ Nair, Praba (2004), Knowledge Management in the Public Sector, Times Editions

Before discussing the general conception of KM, it is necessary to explain three important related conceptions.²

- **Data:** In its scientific meaning, data is the abstract description of objects. In computation and communication, data is the representation form of information to facilitate transformation and processing, which is always represented by a binary system or digital form due to the requirement of computing and transmission.
- **Information:** The meaning of information is user aimed. Information is the processing result of data, which could provide value to user. Information has the following three characteristics: inter-transformation with data, storing and processing in data format, and transfer among users.
- **Knowledge:** Knowledge means people's understanding of objects, and also people's know-how of finding related information. To enterprises and personal computer users, knowledge means the practice skills and the capacity of gathering and using information.

Figure 1.1 The Three Important Conceptions Related to KM



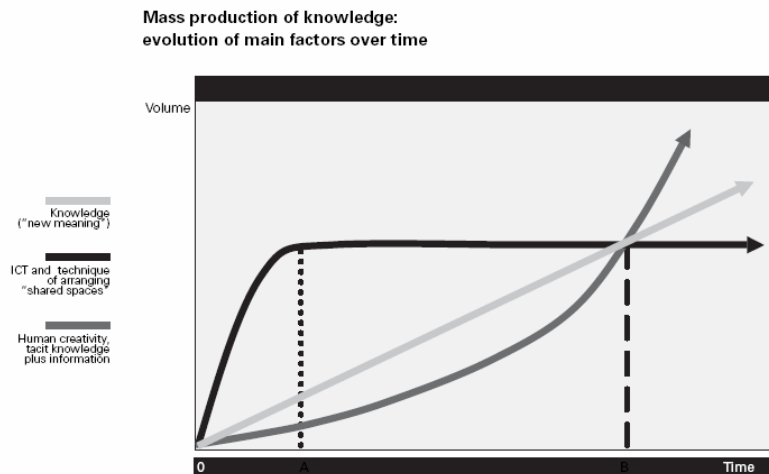
According to United Nations (2005), in the knowledge development process “there are two main assets that can develop *ad infinitum*: people as creative beings and carriers of tacit knowledge; and information (explicit knowledge) that triggers people’s creative reflection, leading to the appearance of “new meaning.”

In this process ICT has allowed the mass production of knowledge, diffusion and usage. Nevertheless, ICT is only a tool, because the factor that creates and accelerate this process is people. Figure 1.2 shows that ICT on time will become a constant, while creativity has an exponential growth.

There are two types of knowledge: explicit and tacit. The first refers to justified beliefs, codified in a formal language for transmission or modification by different media, including ICT. Tacit knowledge refers to information combined with experiences, context, interpretations and judgments; it is intangible and hard to formalize.

² Zhang Lei, Ren Shouju, Jiang Xiaodan and Liu Zuzhao (2000), Knowledge management and its application model in enterprise information systems, Technology and Society. University as a Bridge from Technology to Society. IEEE International Symposium on 6-8 Sept. 2000 Page(s):287 - 292.

Figure 1.2 Mass Production of Knowledge



Source: UN

KM is a discipline that focuses on knowledge processing and its corresponding management which permeates each of the following processing stages:

- Understand knowledge
- Discover knowledge
- Capture, and acquire knowledge from a variety of sources
- Select, filter and classify the existing knowledge
- Define storage structures for saving knowledge
- Design ontology of knowledge
- Generate, adapt and/or create new knowledge
- Measure and/or evaluate knowledge
- Visualize knowledge
- Distribute and/or transfer knowledge to other organizations or individuals
- Recommend, share, utilize/apply and sell knowledge
- Retain and maintain knowledge as an asset

A good knowledge-based system should provide an environment where knowledge flows smoothly from a source with knowledge to a destination that needs knowledge. The goal of Knowledge Management is to visit the required information rapidly and conveniently, and enable the right knowledge to be transferred to the right person, at the right time, to make the right decisions. Four aspects of this come to mind.³

- **Externalization:** It means to capture knowledge from its exterior base, developing the similarities of knowledge, and organizing it according to a specialized classifying framework or standard.
- **Internalization:** It means to distill knowledge from its exterior knowledge base, filter it to discover the required knowledge, and represent it in the right way.
- **Agency:** It focuses on the knowledge connections, which help to connect and match the knowledge seeker with the suitable knowledge resources.
- **Cognition:** It is the knowledge operation which is based on the three functions above, and which is the ultimate goal of knowledge management.

³ Zhaohao Sun (2004), A Waterfall Model for Knowledge Management and Experience Management, Hybrid Intelligent Systems. Fourth International Conference on 05-08 Dec. 2004 Page(s):472 - 475

Figure 1.3 Information, Knowledge Source



KM leads to a knowledge network with no limits concerning internal and external sources. This includes⁴:

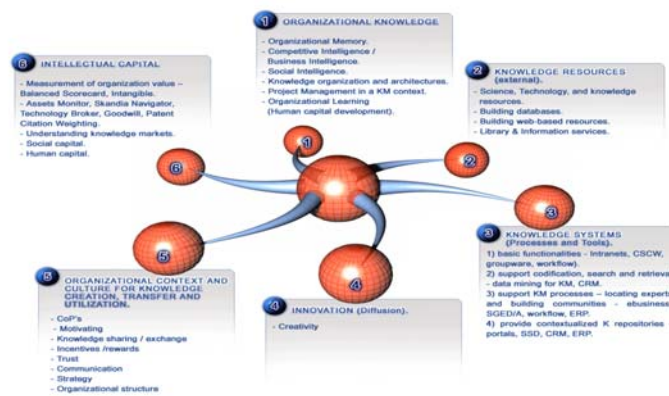
- Libraries
- eCommerce
- Business Info
- Sales
- Technology
- Finance
- Manufacturing
- Partner
- Internal Audits
- Email
- Information contacts
- Training
- Internal expert databases
- External databases
- Market Research
- Universities
- News
- E-government

⁴ Massey A., Montoya-Weiss M., (2003), A performance environment perspective of knowledge management, System Sciences. Proceedings of the 36th Annual Hawaii International Conference on 6-9 Jan. 2003 Page(s):10 pp.

Knowledge Management Systems (KMS) are tools to effect the management of knowledge and are manifested in a variety of implementations including document repositories, expertise databases, discussion lists, and context-specific retrieval systems incorporating collaborative filtering technologies. KM tool examples are:

- CRM
- ERP
- B2C
- B2B
- B2E
- P2P
- G2C
- EAI
- SCM
- BI
- Workflows
- eWorkplace
- E-Learning
- Data Mining
- PDM
- Semantic Networks

Figure 1.4 KMS as a part of a knowledge network



The KMS allow for the acceleration of the process of knowledge generation in a more efficient and quick way because there is an easy access to recent information in time and place, supporting the creation of new knowledge and sharing and promoting ideas that allow results achievement. In this vision, knowledge is a strategic value asset for the organizations and its management is a tool for developing a “learning organization”.⁵

In the design of Knowledge Management Projects, it is necessary to consider four dimensions: organizational structures, processes, organizational culture and necessary infrastructure. A knowledge management strategy entails developing a portfolio of strategically focused initiatives required to achieve business results. Organizations must prioritize these initiatives based on business value, enterprise support and funding⁶.

⁵ Senge, P.M. (1990), *The Fifth Discipline*, New York, Doubleday.

⁶ Sarmiento Anabela, Correia Ana Maria, (2003), Knowledge Management: A Rewarding Challenge for SME's?, Paper presented at Information Resources Management Association International Conference, in Philadelphia (PA), 18-21

2. Knowledge Management and e-Government

Modern governmental bodies carry out and engage in a range of activities. Some of these functions include:

- foreign diplomacy
- military defense
- maintenance of domestic order
- administration of justice
- provision for public goods and services
- promotion of economic growth and development
- operation of social programs to alleviate poverty
- protection of civil liberties

Today, Government probably touches the lives of more people worldwide than any other institution and it has become a pervasive influence on everyday life. The standard test of good government lies in its ability to improve the quality of life of the people. Governments are central players in the new economy⁷.

A series of initiatives to “reinvent government”, create the “new public management (NPM)” which revolves around:⁸

- Market alignment
- Productivity enhancement
- Service orientation
- Decentralization
- Separation of policymaking and service delivery
- Accountability

Although there are different views on the concept of e-Government, the adoption of ICT by the public sector will almost consistently affect:

- public service delivery (citizen-centric approach)
- organizational settings
- the social/political system

In Mexico the main four objectives of Digital Government are the following:

- Satisfy social needs in the Information era, offering a new, entirely citizen-centered approach to governing (e-Governance).
- Convert the government into a competitive entity through innovation using ITC.
- Redefine relations with citizens and the private sector.
- Work together to create a ‘Good Government’.

The social benefit that is expected to derive from this initiative will translate into better public services, available from anywhere at any time, improved transparency and access to public information, improved accountability, increase in government efficiency, increase in citizen participation in public decision making and finally, a general reduction of the government’s operational costs.

⁷ Peters, BG (2001), *The Politics of Bureaucracy*, Routledge.

⁸ Kettl, DF (2000), *The Global Public Management Revolution- A report on the Transformation of Governance*”, The Brookings Institution and OECD (2000), *Government of the future*.

Role of KM in the Public Sector⁹

KM has always been at the core of government tasks through:

- Strategy
- Planning
- Consultant / Advisory
- Collaboration/participation
- Implementation
- Evaluation
- Learning

KM improves the following aspects in government tasks:

- Improved decision-making: The core process of government is decision making. KM can help government agencies improve decisions, leading to better service that is delivered faster and at lower cost.
- Promoting a healthy knowledge society: KM should not be considered merely as an internal management and governance challenge. The government has a unique role to play in promoting the production, use and transfer of knowledge in society.

Other changes that have occurred according to the United Nations (2005) include: “the chance to improve the government by having it use ICT in its internal and external relations (e-government). Some have wanted it leaner and more efficient”. Nevertheless, it is necessary that these changes also affect the ways that government develops its functions; this is changes in processes, structures and interactions. If this can be achieved, the road for a knowledge based government is started. “For now, k-government, i.e. converting organizations within public administrations into (networked) “shared spaces for knowledge creation” gets little traction.

The advances towards government efficiency have “increased people’s participation as citizens of their countries as well as citizens of the world, increased profits in the business world.”¹⁰ Moreover, ICTs allow the voice and opinion of citizens to be heard. KM allows for an effective treatment to citizen ideas and, furthermore allows incorporating to the government endeavor the proposals from this participation. In this two-way scheme, trust in government is increased.

In this relationship between government and ICT there is a need to pay attention to creating value for the services provided. “On the one hand, technology-led change enjoys support. On the other hand, the digital divide (“access divide”), lack of trust in government, privacy concerns, cultural preferences, technical deficiencies of e-government applications and content that too rarely speaks to the real interest of the people decrease interest and discourage support.”¹¹

Furthermore, each organization has a unique set of needs to be addressed by KM. After identifying these needs, the strategy and KM projects for addressing them should be developed.

⁹ Nair, Praba (2004), Knowledge Management in the Public Sector, Times Editions

¹⁰ Source: <http://www.cddc.vt.edu/knownet/barriers.html>.

¹¹ United Nations. *Understanding Knowledge Societies. Twenty Questions and Answers with the Index of Knowledge Societies*. Department of Economic and Social Affairs, 2005.

3. Mexican Government Actions in KM

Aware of KM's usefulness, the Mexican Federal Government has implemented different initiatives for a positive impact if they are supported by ICT. The following are some initiatives for transiting to a learning government.

Governmental Innovation Network

During Vicente Fox's Administration (2000-2006), the President's Office for Government Innovation had impelled its strategy of modernization and cultural change of the Government through the creation of horizontal collaboration networks. Supported by a system of digital collaboration and knowledge collaboration (e-Workplace), networks work on the six strategic lines of the Presidential Agenda of Good Government. The experiences, projects and knowledge generated, are shared by the "Innova" Portal.

Figure 3.1 Innova Portal



Intranet - Comisión Nacional de Arbitraje Médico

In this system public servants can find operating procedures of the Commission, diverse articles and so many publications in matters of medical arbitration, sanitary rights, prevention of the medical-patient conflict, memories of the symposiums and recommendations to improve medical practice available in printed and electronic versions (www.conamed.gob.mx).

Figure 3.2 CONAMED Image



Collaboration Portal in the Ministry of Economy

The concept of an "Environment of Collaboration" in the interior of the Office of the Ministry of Economy allows public servants to access services of messaging, impression, collaboration and single sign-on.

Figure 3.3 Ministry of Economy Portal



e-Learning and KM in the Government of Mexico

The Mexican government started to develop a **Public Servant Portal** (G2E) in 2004, with the objective of establishing a space for horizontal collaboration, knowledge management, decision making, e-learning and electronic services that have an impact on public officials' productivity.

The underlying idea of this project is to convert public servants into knowledge workers through the generation of an e-Workplace.

Three modules are planned for this portal: training, collaboration and decision making and services for officials. So far, the first module has been completed. (www.campusmexico.gob.mx)

Figure 3.4 Public Servant e-Learning Portal



e-Learning in the Attorney General's Office

Through advanced e-Learning tools, the Attorney General impels a new model of training around teach communities which value the experience of public server (www.capacinet.gob.mx).

Figure 3.5 Capacinet Portal



Access to the Public Information and Governmental Transparency

In view of the Transparency Law and Access to Public Information, and to give teeth to this law, the Mexican Government developed the Access System of Public Information (www.informacionpublica.gob.mx), through which, the citizen can obtain information of interest from the public institutions. Towards the same objective of governmental transparency, the citizen portal “Gov.Mx” (www.gob.mx) has a sub-portal of transparency, where the public institutions report to the citizen.

Figure 3.6 Public Information Portal



Figure 3.7 Transparency Portal



CRM and Business Intelligence

The Mexican Government has instituted a CRM initiative. Through this strategy, the public agencies require, analyse and process valuable information in order to take governmental decisions towards better delivery of services to the Citizenship (ciudadano.presidencia.gob.mx).

At the same time, the National System, e-Mexico, has been supported under an initiative of business intelligence to generate performance indicators of projects, thus giving support to the effort of constructing the Information Society in Mexico (www.e-mexico.gob.mx/).

The Office of the Presidency uses a performance indicator system in order to evaluate the results of the Federal Government and create in a dynamic way the presidential report.

Figure 3.8 Citizen Service Federal Network Portal



Figure 3.9 Performance Indicators System

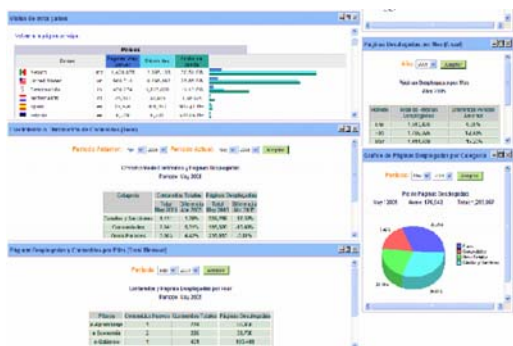


Figure 3.10 Presidential Report



Digital Libraries

PEMEX, the biggest Governmental agency in Mexico, looks for learning and cultural changes through systems of KM and digital libraries in its intranet.

In the same way, the Ministry of Treasury in its intranet and The Ministry of Public Function (www.normateca.gob.mx) embody in their web sites laws and proceedings generated in the Government towards better governmental efficiency. Digital Libraries have been the answer to this objective.

Figure 3.11 Pemex Intranet Portal



Figure 3.12 Normateca Portal



Figure 3.13 Access to Public Information



Process of information exchange with civil society

More recently the labor Observatory portal (www.observatoriolaboral.gob.mx), came into operation, which is an information service featuring jobs, employment and professions, to enable citizens to make better informed decisions about opportunities and job alternatives. Also a portal for professional civil service is online which allows all applicants to monitor the selection process for governmental jobs with transparency.

Figure 3.14 Labor Observatory Portal



Figure 3.15 Online Marketplace for Public Sector Positions (Civil Service) Portal



Citizen Care, Participation and Satisfaction

The Federal Government has developed a system for a personalized following to petitions, improving the processes, promoting citizen online participation and taking into account citizen satisfaction for a better decision making by the public servants. This tool is coming soon.

Figure 3.16 Citizen Participation&Petition Portal



Citizen Consultation for Policy Creation.

President Felipe Calderón’s government has used an online consulting system for gathering citizen ideas and proposals, in order to consider them in the National Development Plan design. This is the second instance that this plan has used ICT for citizen participation, stimulating such participation in a horizontal way with other citizens (pnd.presidencia.gob.mx).

Figure 3.17 Discussion Forums Portal



The KM in e-Government planning

The Inter-ministry Commission for e-Government Development was created in December 2005. This Commission comes with an Executive Board which manages Technical Boards on different issues, including Knowledge Management. The vision of the KM Board is to lead and help in the incorporation and use of ICT and KM concepts in public activities, with the objective of taking advantage of experiences and knowledge, towards improving productivity, and delivering better services to citizens.

This Commission worked in a paper named *KM for Public Sector in Mexico* to explore the rules for recovery, use and diffusion of information, knowledge and experiences accumulated in public institutions and also in their staff, using ICT and KM. This is a pioneer document in terms of providing support and direction in KM for the Federal Public Administration in Mexico.

The best contribution of this document is the KM model with organizational, mandatory and technological aspects. The guidelines for software and other tools are also important. Furthermore, some examples of KM applications are given in the following categories:

- To improve services for citizens
- To take advantage of personal experiences
- To provide access to knowledge accumulated
- To make easy the organization of information and its recovery
- To diffuse in a nimble and efficient manner the available information

4. Lessons learned and challenges

All these efforts of the Mexican government have achieved results; but it is important to draw some lessons. The following comments are relevant:

Lessons learned:

- There is a learning path slowness and the technological appropriation of KMS is still low by the citizens and public servants.
- A better attitude towards sharing information and accepting observations is needed.
- The promotion of results and achievements has not been necessary for achieving big results.

Challenges:

- Design an implementation strategy that considers not only resource management, but the necessary changes in the structure, processes and culture of public organizations.
- Achieve coordination and cooperation among the different government agencies between the three governmental levels towards common objectives and scale economies.
- Assure knowledge transmission, addressing different challenges and designing incentives towards a better utilization and increased impact of KM projects on government operations.
- Cooperate and support with KMS the local public functions, and citizen participation in this matter.
- Promote the private sector's competitiveness with a KM strategy.

The main challenge of the Mexican government is to take advantage of the opportunities provided by ICT and knowledge management towards improving the quality of life of the citizens, with increased efficiency, transparency and participation. The ultimate goal of a knowledge society is to maintain developmental equilibrium, while feeding that knowledge into genuine participation, and in this way, holding those who manage the welfare state accountable.”¹²

5. Conclusion

The Mexican Government has been able to take advantage of the benefits of ICT in terms of improving its efficiency and achieving a better communication with the citizen. Nevertheless, there is still not a clear conception of the role of KM as a key factor in the development of public policy and government functions.

¹² United Nations. *Understanding Knowledge Societies. Twenty Questions and Answers with the Index of Knowledge Societies*. Department of Economic and Social Affairs, 2005.

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THE ROLE OF KNOWLEDGE MANAGEMENT IN E-PROCUREMENT: CONSIP'S EXPERIENCE

Mr. Danilo Oreste Broggi

Good morning Ladies and Gentlemen, I am Danilo Broggi, Chief Executive Officer of Consip, a public stock company wholly-owned by the Italian Ministry of Economy and Finance. Consip was created in 1997 by the Ministry and operates along two main areas of activity:

- the development and management of IT services for the Ministry itself;
- and the implementation, on behalf of the Ministry, of the “Program for the Rationalization of Public Expenditure on Goods and Services.”

Rationalization is a key word for Consip as it does not only mean generating substantial savings, but also:

- designing more efficient e-procurement solutions for public authorities;
- helping public authorities adapt their organizational model to new procurement strategies.

Consip's Corporate values are: Innovation, Transparency, Competence, Competition and Accountability – as well as our inclination to share our know-how and the lessons we have learned so far, This represents “social capital” that would benefit all parties in the system. It benefits:

- economic operators, by broadening their market and making it more easily accessible;
- public authorities, by obtaining the best value for money for goods and services;
- and citizens, by using public money more and more effectively.

Designing innovative e-procurement solutions does not automatically bring about desired changes to the economic system. Even the “smartest” solutions would remain ineffective without an appropriate strategy of Knowledge Management. Knowledge Management requires the coordination of different strategies such as:

- Providing continuous assistance and guidance to economic operators before and after a contract is awarded;
- Accompanying public authorities in reassessing their needs while helping them reorganize their internal purchasing processes;
- Contributing to the professional debate on the economic and technological aspects of e-procurement.

How is this accomplished in practice? Some of our most noticeable examples include:

- our national e-procurement portal which is not only a platform for transactions, but also a source of information on tenders, tender documentation, training events and workshops;
- our e-marketplace in which advanced technological and organizational solutions merge, providing a new channel of interactions especially for local public authorities and Small and Medium Enterprises;
- the development of an account management unit which is devoted to supporting Public Authorities through daily one-to-one interactions;
- the assistance to economic operators through a dedicated area on the portal, through joint working groups and free training courses on the use of new e-procurement tools, and through a network of more than 120 training and information desks all over Italy.

Last, but not least, Knowledge Management takes the form of a continuous involvement in education programs at postgraduate levels with several Italian Universities.

While travelling from the Mediterranean area to Northern Europe to study e-procurement systems, I have noticed that the first step in setting up an e-procurement system has been to **publish** tender documents and all necessary information on the web, making them accessible to all actors in procurement markets.

Higher transparency is certainly instrumental to effective e-government and e-procurement strategies. Moreover, higher transparency is within our reach thanks to continuously evolving technological progress. However, we have to be aware that the benefits of technologically advanced solutions become tangible only if they reach all actors involved, that is, only if every one is able to use and exploit them fully.

This ultimate goal can be realized only through appropriate Knowledge Management strategies that incorporate human capital aspects, as well as the technological aspects of e-procurement.

KNOWLEDGE MANAGEMENT AND E-GOVERNMENT IN BRAZIL

Dr. Peter Knight

Summary

Brazil is still in the early stages of applying knowledge-management techniques to government. At the national level, a technical committee of the Executive Committee on e-Government (the inter-agency e-government policy committee chaired by the President's Chief of Staff) has prepared a draft decree setting forth a framework for implementing such techniques, and seeks its promulgation in 2007. Previously, the Federal Institute for Applied Economic Research (IPEA) had coordinated a major study of e-government practice in federal government ministries and some federal state enterprises using the OECD methodology. Published in 2005, this study called for such a policy framework, having found that in the ministries knowledge management practices were not generally either systematic or widespread.

In the leading state of São Paulo, a survey was conducted in 2006 to determine the degree of knowledge-management maturity of state secretariats (the equivalent of ministries) and other agencies of state government. This survey showed that on six dimensions of knowledge management the average score was in the range of 2-3 out of a maximum of 5. Some best practices were identified in the different dimensions and secretariats/agencies, and measures were proposed for a more systematic approach to government-wide knowledge management. The new São Paulo government which took office in January this year is reviewing these recommendations.

Some leading federal and state enterprises appear to have more established knowledge management policies and practices. In the case of the federal government, this was documented in the IPEA study.

To realize the potential of modern knowledge-management techniques and e-government in general, what is needed is a higher level of political priority for e-government and the intensive use of information and communication technologies (ICTs) as part of a broader strategy of socio-economic development. Given the organization of governments along sectoral lines, strong leadership from the President of Brazil and state governors is critical to realizing synergies and achieving returns to scale. ICTs, however, are enablers – using them effectively requires strong leadership and cultural change. The *e-Brasil* project is designed to raise awareness of the benefits of such an e-development strategy among political leaders and to build a broad base of political support for such an approach.

1. Introduction

In a study much-cited in Brazil (OECD, 2003, p. 8), the Organization for Economic Development defined knowledge Management (KM) as “a broad collection of organizational practices related to generating, capturing, disseminating know-how and promoting knowledge sharing within an organization, and with the outside world, including:

- organizational arrangements (decentralisation of authority, opening up bureaucratic divisions, use of information and communication technologies etc.);
- personnel development (mentoring and training practices, mobility etc.) and management of skills;
- transfer of competencies (databases of staff competencies, outlines of good work practices, etc.); and
- managerial changes and incentives for staff to share knowledge (staff performance assessment and promotion linked to knowledge sharing, evolution of the role of managers, etc.).

The same study noted the reasons that governments, generally lagging behind the private sector in implementing KM policies, have a number of reasons for catching up:

- Knowledge has become a critical determinant of competitiveness for the public sector. In a knowledge-intensive economy, goods and services are increasingly intensive in intangible capital, making knowledge an important element of competitiveness between public bodies. Public bodies increasingly compete with each other for the use of knowledge-intensive inputs (*e.g.* researchers) and for the provision of knowledge-intensive outputs (*e.g.* universities).
- In addition, private firms produce goods and services that are increasingly intensive in intangible capital, directly competing with the goods and services traditionally produced by the public sector.
- Ageing civil servants and faster staff turnover also create new challenges for the preservation of institutional memory and the training of new staff.
- Increasingly knowledgeable citizens require governments to be on top of newly created knowledge, as it is increasingly being rapidly produced by more differentiated actors.
- Finally, public policy goals (*e.g.* “fighting exclusion”) have become more ambitious and complex than before. (OECD, 2003, p. 10)

International organizations too have sought to implement KM policies – for example the World Bank in 1996 initiated a major effort to turn itself into a “knowledge bank” and its 1998/99 *World Development Report* was entitled Knowledge for Development (World Bank, 1999). This was not an easy task, as pointed out by the person who led the effort (Denning, 2000). A major internal evaluation published in seven years later found that

Overall, the Bank has made more progress in establishing the architecture to support its knowledge initiative than in creating the governance arrangements and work processes for carrying it out. As a result, the strategic intent of making knowledge sharing a way of doing business has been only partly realized – a process that in other leading knowledge-management organizations has tended to take three to five years. The Bank needs to move deliberately to embed knowledge sharing in its core operational processes by providing more direct support to task teams and more knowledge capacity enhancement for clients, and it needs to manage its knowledge services for results. (Gwin, 2003, p. xv).¹

This statement probably remains true today, and is likely valid for many private and governmental institutions as well as the World Bank. As Stephen Denning put it in a personal communication, “Overall, the KM area has been stagnating for quite a while, I think. What is needed is to implement the basic principles, which have been clear for some time.”²

Brazil’s federal government and some state governments have been moving toward adoption of comprehensive KM policies, and there are a number of isolated instances of successful implementations at the agency or sub-agency level, but in general Brazil has lagged behind the OECD countries. An exception has been in major federal state enterprises such as *Petrobrás*, and the *Banco do Brasil* which a study conducted in 2005 found to be at a level of KM practice similar to that of the average of 140 OECD government agencies (Batista, et al; 2005) surveyed in an OECD study (OECD, 2003).

This paper reviews the state of KM policy adoption in Brazil’s federal government and the State of São Paulo and concludes with a brief description of the *e-Brasil* project, which promotes public policies to make intensive use of information and communication technologies (ICTs) to accelerate Brazil’s socioeconomic development.

¹ The author conducted interviews in Brazil which were used in this international study.

² E-mail dated 29 April 2007. For Denning’s statement of KM principles, history, and much more, see http://www.stevedenning.com/knowledge_management.htm.

2. Knowledge Management and e-Government in Brazil's Federal Government

In Brazil e-government developed rapidly in the 1990s, and this development deepened at the federal, state and municipal level in the early years of the twenty-first century (Chahin et al. 2004; Ferrer and Santos, 2004). While knowledge management (KM) techniques have in recent years been used in various ministries and agencies of the federal government, and have become well established in leading federal state enterprises, to date no systematic policy framework and directives from the central institution coordinating the federal e-government, the Executive Committee on e-Government (CEGE), chaired by the President's Chief of Staff (*Ministro da Casa Civil*) have been issued.

That situation could change this year, as draft policies and directives have been prepared by the Technical Committee on Knowledge and Strategic Information Management (CT-GCIE), one of eight technical committees established by presidential decree in October 2003.³ These technical committees report to the CEGE and are supervised by its Executive Secretary, the Secretary for Logistics and Information Technology of the Ministry of Planning, Budget and Management (SLTI/MPOG).

According to the abovementioned decree, the mission of the CT-GCIE is to

- Promote KM in the Federal Public Administration
- Promote the use of principles, concepts, and methodologies of KM to the CEGE
- Identify and monitor best practices in KM within the Federal Public Administration, to disseminate the culture of KM in electronic government
- Elaborate and implement a KM policy in the electronic government
- Identify, disseminate and distribute the applications and tools of KM to the CEGE

In July 2005, almost two years later, a report issued by the IPEA (Batista et al., 2005) provided a quite detailed analysis of the current state of KM in 28 federal ministries/agencies and six federal state enterprises. This report describes strategies for KM implementation; compares the Brazilian government situation with that of OECD countries that were surveyed in 2002 (OECD, 2003); proposes recommendations and guidelines for e-government KM policies; and presents recommendations for the development and implementation of a KM policy for the public sector.”(Batista et al., p. 6).⁴

The IPEA report used as its working definition of KM one provided in a CEGE document of 2004⁵, namely “... a set of systematized, articulated and intentional processes capable of increasing the ability of public managers to create, collect, organize, transfer and share strategic information and knowledge that can be used for taking decisions, for the management of public polices and for inclusion of the citizen as a producer of collective knowledge.” (Batista et al., p. 9).

The report found that the large state-owned companies surveyed appeared to have reached levels of KM formalization, implementation and results similar to those of public organizations in OECD countries. While similar results were observed in a few ministries, in most of them the knowledge management initiatives and results were still emerging. The incipient results observed at this stage were found to be “the outcome of isolated initiatives and scattered efforts, sometimes within the same ministry; the absence of communication and shared information about KM practices within and among the organizations; and finally, little awareness about KM among the upper management, middle managers and public servants in general.”(Batista et al., p. 6).

³ This decree, dated 29 October 2003, can be downloaded in pdf at <http://www.governoeletronico.gov.br/governoeletronico/>.

⁴ For the survey instrument used in the OECD study, also used in the IPEA study to get comparative results, see OECD (2002) and for the introduction and summary results see OECD (2003).

⁵ Diretrizes do Governo Eletrônico – Oficinas de Planejamento, 2004, p.17 (cited in draft decree dated 24 April 2007).

The principal policy conclusion reached by the report was that the widespread adoption of KM in central government would “require the establishment of a broad KM policy, with strategic directives, specific resource allocation and training at the various organizational levels.”(Batista et al., p. 6). That indeed was a view already reached by the CT-GCIE in mid December 2003 and recorded in a document of the CEGE which underwent a series of revisions in subsequent months.⁶

Further elaboration of these conclusions, drawing on the IPEA study and further work of the CT-GCIE has resulted in a draft decree which as of this writing (late May 2007) is still under consideration by the CEGE and the Casa Civil.⁷

The draft decree would establish a Public Policy on KM (using the definition quoted above) with the following general objectives for the Federal Public Administration (APF), a term which includes ministries, agencies, parastatals and federal public enterprises:

1. Improving the efficiency, effectiveness and quality of public policies and services for citizens and Brazilian society;
2. Promoting transparency in public management by providing citizens with access to government information and a growing ability to participate in and influence political-administrative decisions regarding:
 - the incentive to create culture, among government leaders, regarding the importance and utility of knowledge in public management;
 - developing a culture of collaboration among governmental areas and creating and sharing knowledge between the government and society;
 - the incentive to develop cognitive competencies, pragmatic and attitudinal, of public servants, employees or officials oriented to the sharing and creation of knowledge; and
 - disseminating the results and benefits of implementing KM in the APF.

The draft decree establishes ten directives to achieve these general objectives:

1. encourage and support public organizations of the APF in planning and executing KM initiatives;
2. promote raising awareness of managers for the strategic use of knowledge in organizations of the APF;
3. endow the professionals of the APF with competencies (knowledge, skills, attitudes, and values) for planning and executing KM activities;
4. measure the results and benefits of the use of KM in the APF;
5. promote the broad dissemination of actions, results, and benefits of KM in the APF;
6. support the carrying out of technical events in the área of KM;
7. support activities to promote developing a culture of knowledge sharing within the organizations of the APF, among them, with the other levels of government (state and municipal) and with society at large;
8. guarantee the access of civil servants and citizens to the information and knowledge available in the APF;
9. assure the structure, legislation and skills necessary to sponsor, mobilize and direct the implementation of a KM Plan for the organizations of the APF; and
10. encourage the incorporation of knowledge, in an innovative way, into the processes and products (policies and services) of the APF.

Finally, the draft decree provides for creating a high-level Management Committee for the KM Public Policy headed by the President’s chief of staff (*Ministro da Casa Civil*) with its Executive Secretary being the Secretary of Logistics and Information Technology of the Planning Ministry (these are the same arrangements as for the CEGE) to monitor implementation of the federal KM policies; charges this Management Committee with establishing and implementing a Strategic KM Plan for the APF; tasks the

⁶ This observation is based on a review of unpublished documents of the GT-GCIE.

⁷ The following is based on a draft of the decree dated 24/04/2007.

organizations of the APF with developing KM plans within the Multi-Year Plan (PPA) and also providing resources in their budgets to implement these plans; and tasks the National School of Public Administration (ENAP) with formulating a training program to carry out the KM plans of organizations of the APF and monitor these own organizations' training plans.

Should the decree in anything close to its present form be promulgated by President Luiz Inácio Lula da Silva, the stage would be set for a serious government-wide effort to link KM with e-Government, improving the efficiency, effectiveness and transparency of the federal government.

3. Knowledge Management and e-Government in the São Paulo State Government

The state of São Paulo – with a quarter of Brazil's population, a third of its GDP and more than 40 percent of its industry – is Brazil's leading state. São Paulo has followed a similar course to the federal government in researching and preparing KM policies. It appears poised to launch a government-wide KM policy should the preparatory work undertaken in the Geraldo Alckmin administration be accepted by the government of José Serra, who assumed the governorship in January 2007. In São Paulo, KM is being coupled with innovation, and the policies in preparation cover both related topics. Some of the same consultants were involved in the preparatory research conducted by the Foundation for Public Administration (Fundap) in São Paulo and the IPEA study of the federal government.⁸

The work on KM and innovation carried out in São Paulo to date has been organized by the Committee for Quality in Public Management (CGQP) of the Governor's staff (Casa Civil).⁹ The mission of the CQGP is the creation of "a single government" the values of which are: teamwork; collective construction of knowledge; respect for the public manager; shared decisions, responsibilities and resources; interoperability, integration, and partnerships (Fundap/FIA, 2006 p. 10).

Knowledge management and innovation (GCI) were found to require that the government:

- *For innovation*
 - Provides incentives for innovative actions, especially those that can result in debureaucratization and facilities for citizen access to state services and horizontal work between the various Secretariats [Secretariats in Brazilian state and municipal governments are analogous to ministries at the national level]
- *For raising awareness and sharing knowledge*
 - Increases the involvement of managers and high-level professional in the initiatives of Innovation Management, identifying and encouraging practices of horizontal sharing within and between the Secretariats;
 - Expands the sharing of innovative practices of management (whether or not associated with the use of information technology).
- *For metrics*
 - Improves the dissemination of metrics which show the good results achieved by innovative programs in public management, giving special attention to those that include means for evaluating the satisfaction of citizens. (Fundap/FIA, 2006, p. 11)

In 2006, Fundap, which reports to the Casa Civil, undertook a set of activities to evaluate the current state of GCI in the State of São Paulo. This included a major report and a series of case studies with accompanying videos on best practices in GCI in the secretariats and agencies of the state government.

⁸ José Cláudio Terra of Terra Fórum Consultores. See Batista et al, (2005) and Fundap/FIA (2006).

⁹ See <http://www.cqgp.sp.gov.br/>.

The objectives of the project were to:

- Raise awareness of managers and civil servants concerning the benefits of GCI
- Encourage debate on practices in the Public Administration related to this matter
- Carry out a broad diagnosis and identify good practices related to GCI in the secretariats and organs of the Government of the State of São Paulo
- Develop case studies on best practices identified in the study
- Develop directives for sustained adoption of GCI in the Government of the State of São Paulo
- Prepare Training Programs to improve Public Management of the State. (FUNDAP/FIA, 2006, p. 11)

The study, carried out in 21 state secretariats and agencies, was based on a model of maturity in GCI along six dimensions: learning, metrics, governance, culture, information management, and networks for collaboration developed by José Cláudio Terra (Fundap/Terra Forum/FIA, 2006).

What were the overall conclusions of this survey? Here is a summary.

1. Little structured interaction between the agencies, limiting the sharing of knowledge
1. Embryonic efforts at disseminating learnings, practices and improvements
2. Lack of directives and clear responsibilities regarding GCI
3. A prevailing culture which does not privilege knowledge sharing, initiatives to make improvements or collaboration through networks
4. Identification of some information management processes to promote access and sharing of knowledge and practices
5. Lack of metrics allowing evaluation of the creation, sharing, and application of knowledge to verify efficacy and innovation. (Fundap/Terra Forum/FIA, 2006)

In each of the six above-mentioned dimensions of GCI maturity, the study gave a rating of one to five for the 21 secretariats and agencies. The following table provides these rankings, averages and standard deviations.

Evaluation of Knowledge and Innovation Management in the State of São Paulo

SECRETARIAT	Governance	Culture	Information Management	Networks	Learning	Metrics
Prison Administration	3.0	2.8	2.5	2.3	2.3	2.0
Agriculture and Supply	1.3	2.0	2.0	2.0	1.0	1.0
Social Development and Assistance	1.5	2.8	2.0	3.0	2.0	1.5
Governor's staff (<i>Casa Civil</i>)	2.0	2.3	3.7	3.0	3.0	1.3
Science and Technology	1.3	1.3	1.7	1.0	1.7	1.3
Culture	3.0	2.0	3.0	2.0	1.0	1.0
Planning and Economy	3.0	2.8	2.5	2.3	2.3	2.0
Education	3.0	2.5	3.0	3.0	3.0	1.5
Employment and Labor Relations	1.8	2.0	2.0	2.0	1.5	1.0
Energy, Water	2.0	1.5	2.8	2.5	1.3	1.0

Supply and Sewerage						
Finance	3.8	3.0	3.3	1.8	2.8	1.5
Housing	1.7	2.0	2.7	2.3	2.0	1.0
Justice and Citizenship Defense	2.3	2.3	1.7	2.3	1.3	1.0
Youth, Sport and Leisure	2.0	1.0	3.0	1.0	1.0	1.0
Environment	3.3	2.8	3.5	4.0	3.3	1.5
Attorney General	3.3	3.8	4.0	3.3	3.0	3.3
Health	2.5	2.8	3.0	3.3	2.5	1.3
Public Safety	3.0	2.8	3.3	3.3	3.3	2.3
Transportation	1.5	2.0	3.0	2.0	1.0	1.0
Metropolitan Transportation	2.8	2.5	3.8	3.0	2.0	2.0
Tourism	1.0	1.0	1.5	1.0	0.0	1.0
Average	2.3	2.3	2.8	2.4	2.0	1.5
Maximum Value	3.8	3.8	4.0	4.0	3.3	3.3
Minimum Value	1.0	1.0	1.5	1.0	0.0	1.0
Standard Deviation	0.78	0.68	0.71	0.80	0.89	0.58

Source: Fundap/FIA, 2006, p. 21.

The averages for these 21 secretariats and agencies ranged from a high of 2.8 for information management to a low of 1.5 for metrics.

The key recommendations of the study which cut across the six dimensions are the following.

1. Put GCI on the agenda for public managers.
2. Treat GCI in a systematic and not fragmented manner in the Government of the State of São Paulo.
3. Develop processes for creating, sharing and using knowledge to improve public management and service delivery to citizens.
4. Identify, support, value, disseminate and use existing good initiatives in any of the six dimensions of the Maturity Model in the Government of the State of São Paulo. (Fundap/FIA, 2006, p. 36)

Specific directives and recommendations were also set forth for each of the six dimensions. (Fundap/FIA, 2006, pp. 36-42)

A series of six case studies with accompanying videos was prepared on the best practices identified in each of the dimensions and in April 2007 a series of talks and presentations was organized to disseminate the results of the study and its key recommendations. Thus São Paulo, like the federal government, could move from isolated examples of good KM practices to the establishment of a comprehensive, government-wide policy to promote KM and innovation in public management.

4. Leadership, Cultural Change and Consensus Formation

Should KM policy frameworks be established at the federal level and in important states like São Paulo, the groundwork would be in place for major advances in KM and e-government throughout Brazil. But as Brazilian experience with the CEGE and that of other organizations which have tried to implement comprehensive KM policies suggests, having the right policy framework is only the first step on a difficult road involving major cultural change within governmental agencies and requiring the alignment

of incentives (salaries, promotions, etc.) and sanctions (demotion, dismissal, etc.) with government and agency policies.

Both KM and e-government can contribute to the reform of public administration to make governments more efficient, transparent, responsive to citizen needs, and effective in achieving Brazil's development objectives. Overcoming resistances to such needed changes requires leaders in government with both a good knowledge of how ICTs can be harnessed to help achieve such changes and strong skills in public administration. These leaders need support from the top of the federal and state governments – that is the President and the state governors. They and legislative leaders need to help build a broader political consensus that these are goals worth pursuing, and will benefit citizens. Popular understanding and support can in turn strengthen the reform process.

The experience of other organizations and countries that have been successful in harnessing ICTs for achieving their developmental objectives (KM policies and practices depend greatly on the use of ICT) teaches us that it takes strong leadership from the top of the political system to realize the economies of scale and synergies which are inherent in these technologies. Organizational culture in public bureaucracies and to a lesser but still significant extent in large-scale private corporations and other organizations tends to reinforce sectoral “silos” or “stovepipes” that defend their own turfs and resist major change. Overcoming these resistances requires vision, leadership and deliberate efforts to build a broader consensus in society (Hanna, 2007; Knight and Fernandes, 2006; Knight, Fernandes and Cunha, 2007).

5. The e-Brasil Project

Building support among political leaders, their advisors, the ICT sector, and the public at large for intensive use of ICT to accelerate Brazil's socioeconomic development is the principal objective of the *e-Brasil* project. ICT-supported KM and e-government are important parts of this project, which involves a network of over 60 specialists, mostly Brazilian but including some in other countries. To date they have collaborated in a program of publications, presentations at major conferences in Brazil, and development of the *Portal e-Brasil* (www.e-brasil.org.br). The project team is now moving to develop a strategic communication campaign, academic programs to support the development of “e-leaders” knowledgeable in both public administration and ICTs, and fundable projects at the municipal, state and federal level which can attract financial support from Brazilian and international sources.

As of late May, 2007 the *e-Brasil* Program¹⁰ that the team has developed has been adopted as its own by two major Brazilian organizations, the Brazilian Chamber of e-Commerce (www.camara-e.net) and the Brazilian Telecommunications Association (www.telecom.org.br). The team hopes to attract the support of additional organizations of Brazilian organized civil society.

¹⁰ See http://www.e-brasil.org.br/portal/defmod_brasil.aspx?p=4&n=71 and Knight and Fernandes (2006, pp 10-31) and Knight, Fernandes and Cunha (2007, in press).

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ECOSYSTEM OF POLICY-RELATED KNOWLEDGE

Dr. Sun-Bin Kim

1. Definition of Policy-related Knowledge

Policy-related knowledge refers to a body of knowledge that administrative or legislative or any other branches of government make use of when making decisions on public affairs. People in government make use of it when they set important public agenda, establish or implement policies and assess or revise policies. As uncertainties and complexity increase in the affairs of the state, the need for high-quality policy-related knowledge simultaneously rises. In this report, the meaning of high-quality policy-related knowledge refers to a “complex body of knowledge” that can contribute to taking rational decision-making and problem-solving. In order to deal with an ever-complicated economic, social or political environment of our society, fragmentary knowledge or simple accumulation of basic research is often inadequate. Instead, we need a high-quality policy-related knowledge that can solve problems and help make sound public policy decisions.

This report conceptualizes policy-related knowledge as intellectual infrastructure that can help maximize efficiency of governance. We analyse policy-related knowledge based on the understanding that the process of production, distribution and consumption of policy-related knowledge is similar to that appearing in the food chain of the natural ecosystem. Thus the “ecosystem of policy-related knowledge” covers people and organizations that participate in the process of production, distribution, and consumption of policy-related material and interaction between these participants. In the ecosystem of policy-related knowledge, producers consist of research centers or public intellectuals; and consumers include the administrative and legislative branches of government, the political parties and pressure groups; and distributors are the media such as newspapers, broadcasters, and the Internet media; and environments consist of political, social and economic institutions, with demands from the public for policy-related knowledge, and the overseas ecosystem of policy-related knowledge.

2. Republic of Korea’s Knowledge Ecosystem

Lack of diversity

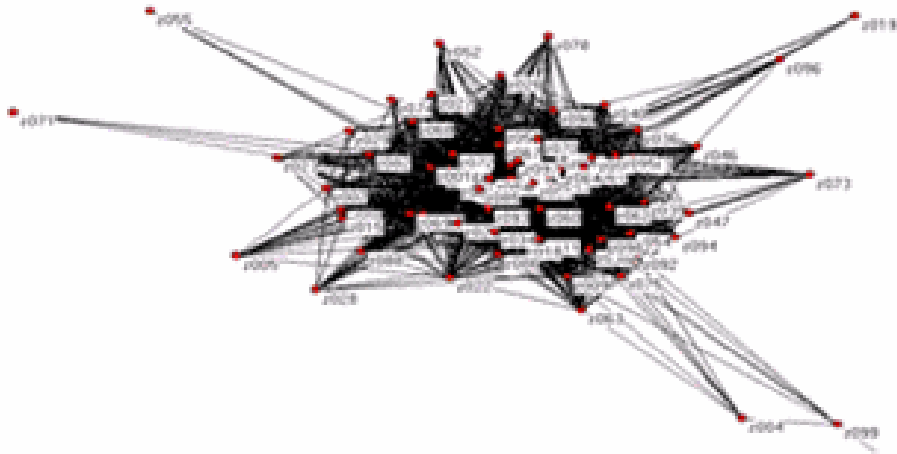
In the past in the Republic of Korea, public policies were made exclusively by the public sector or government agencies. Since the country’s democratization in the 1980s, however, not only state-owned research centers but also private research groups or research groups attached to civic organizations have emerged. Universities also play a role as knowledge providers. Since the Asian financial crisis of 1997, groups doing economic, political and social research have dramatically increased. At the same time, the government has begun tapping private think tanks for policy ideas.

In order to better understand their diversity, we at Samsung Economic Research Institute have examined the cases of nine significant policy issues that cropped up between 2003 and 2005 and a total of 1,249 reports related to these issues. (The nine issues we examined are debates over amendment of the National Security Law, policy decision on sending Korean troops to Iraq, the proposed relocation of the administrative capital outside Seoul, quality standardization of high schools, problems related to corporate governance, operation of the national pension program, a proposal for tax increase or tax cut, the housing market speculations, and the free trade agreement (FTA).)

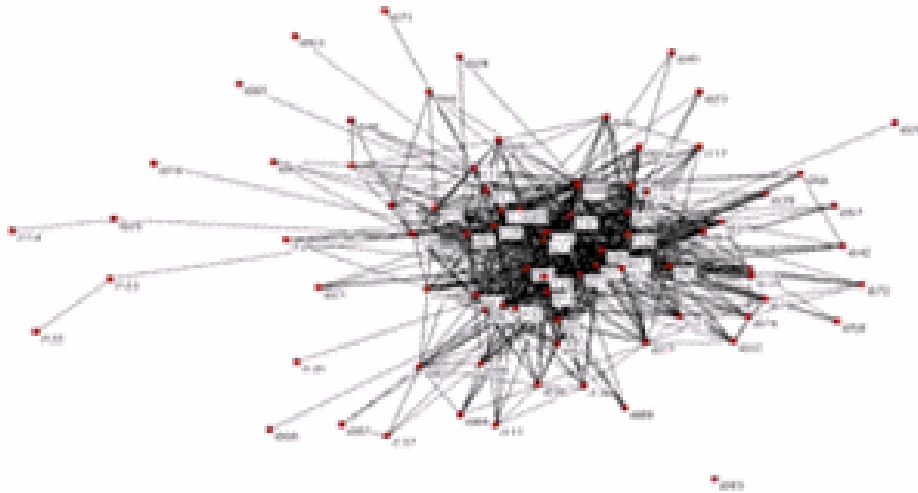
According to the results of our examination, the Republic of Korea’s ecosystem for policy-related knowledge was not strikingly diverse, despite the dramatic growth in the number of think-tanks.

Policy issues are divided into three types: political issues, economic issues and social issues. Our research shows that network structure is dense in political and social issues. (Here, a dense network structure means that producers of policy-related knowledge have failed to provide differentiated and diverse knowledge.)

Network Structure of Debates over Relocation of Administrative Capital



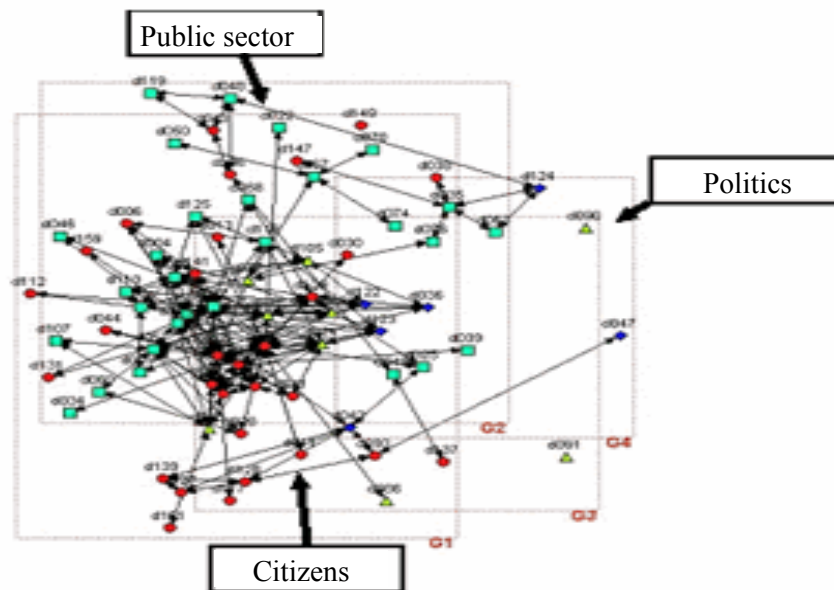
Network Structure of the Debates over Quality Standardization of High Schools



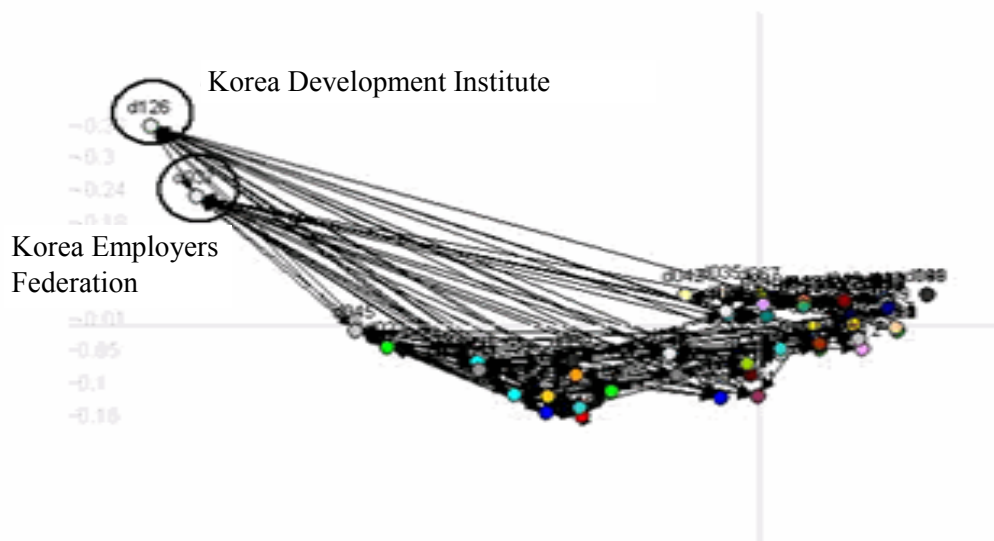
Note: Nodes appearing in the network mean intellectuals, a kind of knowledge producers, and the links refer to the interaction among intellectuals. The interaction among intellectuals is determined by how closely their reports are related.

On the other hand, intellectuals dealing with economic issues take advantage of diversified policy-related knowledge, but their opinions are not as diverse as expected. As seen in the figures below, the network structure of economic issues is less dense than those of political and social issues. However, intellectuals dealing with economic issues have mostly depended on some limited number of research papers and organizations.

Network Structure of the Debates over the National Pension System



Role of Each Research Center in the Debates over the National Pension System



Interaction in the Republic of Korea's ecosystem of policy-related knowledge

We analysed how frequently Korean intellectuals refer to the works of other intellectuals in their reports. According to our research, even though the number of think tanks has increased dramatically, they do not compete against each other or cooperate with other think tanks. When analyzing how Korean intellectuals set forth their opinions about the aforementioned nine major issues, their role was limited to responding to the opinions revealed by political leaders who had first set the agenda. A thorough analysis of reports related to the nine issues shows that 488 out of 807 authors available were not quoted at all by other authors. It shows that Korean intellectuals do not closely interact with each other.

Korean Intellectuals' Interaction

	Number of authors	Number of quotation	Average number of quotation
Authors quoted	319	1,195	3.7
Authors not quoted	488	0	0
Total	807	1,195	1.5

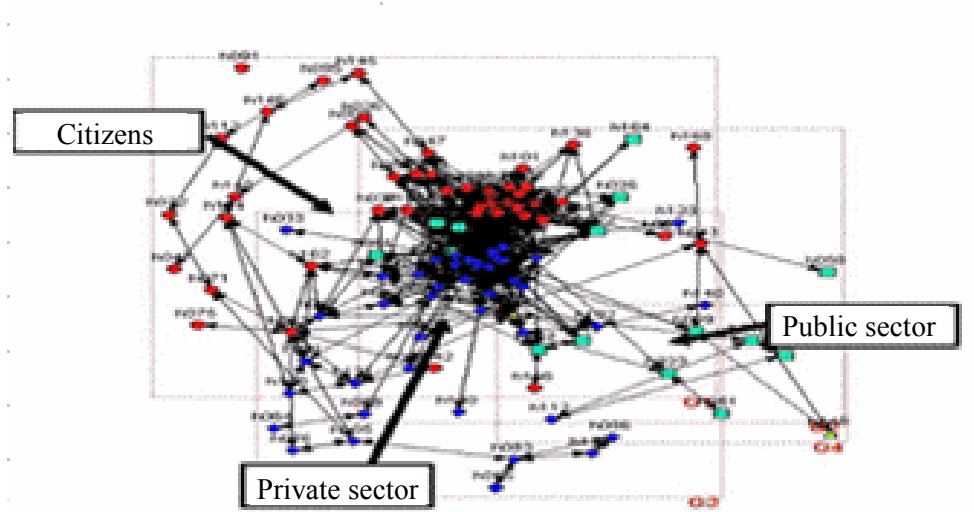
Instead of closely cooperating with other local analysts, Korean intellectuals turned out to be heavily dependent on overseas analysts. Since the aforementioned nine issues are mostly related to domestic affairs, it would have been more understandable if Korean intellectuals had quoted policy-related knowledge from reports written by local analysts. However, they quoted reports released by global organizations such as the Organization for Economic Cooperation and Development and the United Nations a total of 190 times when writing their reports on the nine issues, while quoting from reports by Korean think tanks amounted to a total of 142 times. This shows that the Republic of Korea's ecosystem of policy-related knowledge is biased in favor of overseas policy-related knowledge.

Selection mechanism

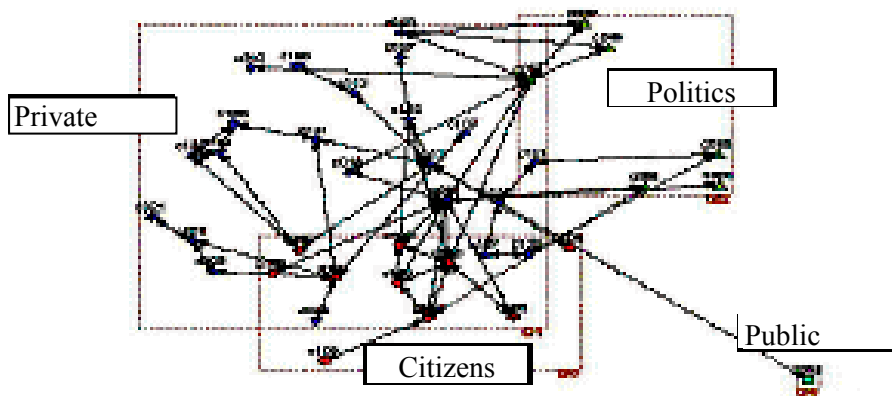
In the past, the government had a tight grip on the production and consumption of knowledge, thus establishing state-owned research centers providing a policy-related knowledge fit for the government's policies. However, the government-driven knowledge selection mechanism failed to efficiently adapt to environmental changes and have finally disappeared.

Recently, sources of knowledge production and consumption have diversified. But a mechanism to select useful policy-related knowledge in an efficient and fair manner has not been established yet. The absence of an efficient knowledge selection mechanism can be explained by the fact that the relations between knowledge producers and knowledge consumers have failed to catch up with systematic change. For example, the political circles, which should have exerted an all-out effort to resolve problems surrounding corporate governance, have hesitated to participate in the debates. Similarly, the government, which first put the FTA-related issues on the agenda, and the political circles, which should have taken the initiative in finding out solutions, has taken steps backward in the debate over FTA. The lack of close relations between knowledge producers and consumers suggests that the government might not choose a good solution which takes policy-related knowledge into consideration when setting up policies.

Network Structure of the Debates over Corporate Governance



Network Structure of the Debates over FTA



3. Conclusion

The Republic of Korea's ecosystem for policy-related knowledge can grow when it is diverse, and promotes interaction between knowledge producers and consumers and selects useful knowledge.

Promote diversity

The Republic of Korea can promote the diversity of its ecosystem for policy-related knowledge by diversifying knowledge producers and strengthening the role of knowledge producers as knowledge coordinators. (Here, knowledge coordinators refer to individuals or organizations that can suggest solutions after considering all the opinions related with the issues.) In order to promote diversity, the social tolerance level should be upgraded. In other words, individuals constituting a society need to tolerate different opinions. Establishing a consultative body under the supervision of the president can be a good measure.

Also, the government needs to pursue ambitious projects so as to promote the growth of the ecosystem for policy-related knowledge. In the wake of the Apollo Program, the US could secure advanced space technologies. The government and the National Assembly also need to cooperate to set forth future strategies. The US Congressional Research Service can be a good model for the Republic of Korea to support lawmakers' research activities. The government also needs to consider setting up a permanent agency to pursue large-scale national projects.

Interaction via competition

In order to promote interaction, the ecosystem for policy-related knowledge should be open to outsiders. At the same time, however, it needs to change the outside knowledge fit for the ecosystem. For this to happen, the Republic of Korea should strengthen domestic research capabilities by securing budgetary funds and encouraging the private sector to donate more money. Also, it needs to expand exchanges with the overseas knowledge ecosystem via joint research.

For a better interaction in the ecosystem of policy-related knowledge, the Republic of Korea needs to cut the costs required to exchange knowledge while promoting the exchange of knowledge. In Washington, diverse research centers frequently hold seminars, thus accelerating the distribution of knowledge. The free flow of knowledge in Washington can be a good model for the Republic of Korea. Internet sites dealing with policy-related knowledge and a career certificate system which assesses and authenticates intellectuals' career and intellectual capacity can be efficient measures to promote the distribution of knowledge.

If a policy-related knowledge cluster is set up in an area where consumers of the knowledge are crowded, it can promote better interaction of the ecosystem. At the same time, the nation needs to take advantage of the arena of debates such as the National Assembly's hearing sessions and suprapartisan research activities.

Selection

The government can further foster the Republic of Korea's ecosystem of policy-related knowledge only when it well selects useful knowledge and offers rewards for the knowledge provider. In the United States, many public foundations and private funds donate money to finance knowledge providers and reward outstanding knowledge providers. In order to emulate this system, the Republic Korea needs to make its selection procedure transparent and involve diverse parties in its knowledge assessment process. Also, it should establish an efficient system in which quality knowledge providers are given not only financial reward and fame but also a chance to serve as public officials.

Last but not least, the ecosystem of policy-related knowledge can run smoothly when the government and knowledge consumers have a faith in the knowledge provided by specialists. In this regard, the government needs to further open its information to the public, expand the public database system, and improve the management system of organizations which use policy-related knowledge such as the National Assembly and political parties.

E-GOVERNMENT KNOWLEDGE IN EU REGIONS (INCLUDING CZECH EXPERIENCES)

Dr. Irina Zalisova

This paper presents some considerations about regional eGovernment in the framework of a wider discussion about shared democratic values, global concerns & trust, empathy & cultural identity. The main conclusions are based on a brief evaluation of experiences of several EU regions, members of eris@, the European Regional Information Society Association, which were gathered during 2 years of activities of the eGovernment Working Group in the framework of IANIS+ project (www.ianis.net), financially supported by the European Commission. Regional experiences were presented in personal discussions, roundtables, case studies and are summarized in the Guide to Good Practices in eGovernment.¹

e-Government take-up in Europe has many forms and faces, with a range of more or less successful local, regional and national eServices across the continent. Unfortunately, those services are still islands of automation which often cannot work together. It seems that European administrations are still underestimating the interoperability aspect, although a certain consensus was reached in numerous discussions about different faces or layers of eGovernment interoperability, as a multi-disciplinary field with technical, organizational, legal, human and societal aspects. Perhaps, the term 'eGovernment' is not the most appropriate one for the future, and in the Age of Access it is better to be thinking in terms of networked citizens, businesses and governments. Probably some other term will appear to reflect better the need for the internal re-organization of public administration in the sense of changing the system and its architecture, its interoperability and innovation. The core of the challenge is the need for organizational change, with the main barrier being the slowly changing mindset of all stakeholders, compared to fast changing technology.

Facing the need for organizational change, the regional European public administrations behave differently, depending on the cultural and economic background, level of ICT adoption and on the maturity of the democratic system. Those most advanced are providing a lot of G2C and G2B eServices : e.g. the German region of Bremen is providing more than 100 on-line services, the United Kingdom regions about 200, while regions from NMS (new member states) are providing less than 10 and not all of them are 100% electronic, but often are combined with a "paper" phase. In general, regions from NMS still have a complicated transition period ahead, with a lot of difficulties arising from their not fully developed democratic mechanisms, where even a small mistake in the re-organization of public administration structure and processes could block the transformation process for a significant period.

After some initial period, when eGovernment was something like "mission impossible" for NMS, some of them have made visible progress, as for instance, Estonia, and some are still in the first phase of integration of the back-office, as for instance, the Czech Republic. There are still too many barriers, including the lack of interoperability of people and processes. On the plus side, there are the high dynamics of economic growth and development, the big potential of educated employees, rich natural resources, and good geography.

All European regions, independently of the stage of implementation of eGovernment, show still a big **lack of knowledge** about proper tools and for the measurement and evaluation of the success and real benefits of eGovernment projects. Regions have difficulties in how to make the local governments more efficient and effective, and how to inspire them to use the benefits of innovation in eGovernment. It is necessary that regional authorities are aware and have the tools and manuals on how to measure the economic effects. But they cannot stop there. They need to be able to explain to citizens and to themselves the wider impact of eGovernment. Why this big effort for implementing of particular projects was done?

¹ Guide to Good Practices in eGovernment, eris@, Brussel, 2007

What is the value for the regional community and for the region? What are broader social, political and economic benefits of eGovernment?

During past few years some steps have been taken in this direction, and I will mention some of the existing European measurement and benchmarking activities:

- An IDABC study, Background Research Paper, 2005²,
- Member States measurement initiatives of various nature and scope³;
- The OECD overviews of business cases for eGovernment
- The 2005 UK Ministerial eGovernment conference in Manchester, United Kingdom, which addressed take-up and impact, and also provides first measurement results and strategy analysis.
- The eGEP project, initiated by the Commission under the MODINIS programme, which is a study into the financing, economics and benefits of eGovernment⁴

Regions cannot speak about the impact of eGovernment without an understanding of the input side and the whole economics of eGovernment projects. Before the beginning of any eGovernment project, regions want to be aware of the expected spending, related to such a project. Aside from the **direct costs** for hardware and software, telecommunication, connectivity, special CRM systems, call centres and other predicted and planned elements of the project, it is necessary to broadly define the **costs of organizational change**, related to the particular project, including the demands placed on the **educational** level of personnel involved.

The last in-depth analyses and recommendations on these issues can be found in the Expenditure Study of the **eGEP** project, funded by DG INFSO. The project suggests a simplified **Rule of Thumb** guideline for the main cost components and their breakdown for a five year perspective. The study presents also the results of the quantitative assessment of ICT and eGovernment Expenditure by public administration.

According to the eGep project, the eGovernment Cost Element Structure could encompass the following components:

1. SET UP
 - a. Planning Phase
 - b. Implementation Phase
2. PROVISION
3. MAINTENANCE
4. PERFORMANCE MEASUREMENT AND QUALITY CONTROL
5. RESEARCH AND DEVELOPMENT

The study of the eGEP project has come to the conclusion, that the costs of R&D can't be strictly limited to technological R&D, but **may include such costs as research on user needs**, on the ways to increase take-up, on how to better target services, and on improving usability etc. According to the latest studies, the budgets of eGovernment projects need to factor in almost 50% of total **costs for organizational change** (including internal, inter-institutional reorganization and cooperation, costs of changed management, initial training costs etc.).

This corroborates the observations of the IANIS+ project, that costs for the competent human involvement in the realization of eGovernment projects are therefore very real. There is an urgent need for a new type of public administration staff with relevant educational background (eskills, information management and organizational processes, and the basics of social and political sciences). Unfortunately, this is not envisaged in regional projects and is still not reflected in the **structure of finances** allocated for eGovernment projects.

² IDABC eGovernment Observatory, <http://europa.eu.int/idabc/egovo>

³ Good Practice Framework, <http://www.egov-goodpractice.org>

⁴ www.rso.it/egep

An understanding of the economics of eGovernment projects creates one of the basic conditions for the success of innovation in regions. The increased participation of citizens increases “social trust” and supports the civic society, thus enhancing democratic values. Regional communities start to be very sensitive to a clever spending of public resources and start to be interested in effective and efficient public spending.

Efficiencies can be composed of several indicators, such as the reduction of cost per unit, higher levels of productivity, sharing processes and data re-use, people changed attributes (behaviour, skills, leadership, awareness), etc. This set of indicators reflects the financial and organizational value of eGovernment projects.

Effectiveness comes from the integration process and may include social dialogue and the growth of public value alongside with an inclusiveness of public services. It may include the simplification of procedures/reduction of administrative burdens, accountability, and a multi/channel approach,.

All regions, which are seeking the multidimensional qualitative assessment of public value potentially, generated by eGovernment, need to take also into account such **democratic attributes** as trust, openness, transparency and accountability, and participation. This could be developed into a more detailed **set of performance indicators**, which could reflect the growing social capital and together with civic engagement may strengthen **social trust**. Thus, **efficiency, effectiveness and democracy** create the basic framework for the measurement of public values of eGovernment projects.

Democratic attributes/regional marketing	Trust and Openness
	Transparency and Accountability
	Citizens’ Participation (eParticipation)
	Leadership Development Analyses
	Linkages between institutions (shared membership across domain boundaries)
	Social capital
	Visions of the region’s future
	“Turnover” of the population (coming in and out)
	Participation in regional/, international networks etc.

All these elements bring positive attributes to the regional community and make that particular region more attractive, in terms of “regional marketing” and positioning. Of course, in order to observe innovation at the **regional level**, it is also necessary to take into **consideration the specifics of regional culture** in influencing the success of eGovernment projects and of knowledge society related policies in general.

Political leaders, including regional decision makers could create new kinds of social interactions, e.g. the building of: moral trust, economic trust, political trust, social trust, and technological trust. The last one, technological trust, is explained as an emphasis on technological democratization, “adopting technological innovations to make government more efficient, inclusive and accessible for citizenry such as through eGovernment and eParticipation”⁵

e-Participation is enhancing *participatory representative democracy* and opening new channels for citizens and civil society interactions in democratic processes. It is emerging as the logical development of e-Government to e-Democracy and a new challenge for tomorrow’s Europe. *New technologies are bringing into this field a lot of new possibilities and tools, which need to be evaluated and used properly,*

⁵ Peri K. Blind, Building trust in government in the twenty-first century: Review of literature and emerging issues, Paper for 7th Global Forum Reinventing eGovernment, Vienna, 2007

especially in new democracies in transition. We still need to ask ourselves, if our society is now really an Information Society, in which low-cost information and ICT are in general use and in which ICTs have brought about deep changes in our ways of working and living, maintaining democratic values. eDemocracy is demanding a specific model of democratic governance to achieve Information Society goals, where the participation of citizens and governments is a fundamental pillar.

For regions it is a real challenge to integrate the results of European research and innovation efforts in eParticipation practice. Within this integration effort, reference could be made to some preliminary results of the European Network of Excellence DEMO-net (www.demo-net.org), which has set the basics for the **dialogue of distinct stakeholders**. Several categories of topics relevant for eParticipation research were identified, such as: political-strategic issues, organizational (covering also legal aspects), public value generation issues, social and socio-economic socio-technological and pure technological, etc.

This corresponds to the statement of the Lisbon Council about the effects of ICT-use on **social participation** (social networks, social capital and community building), **political participation** (voting behaviour, party membership and other forms of civic engagement), and **economic participation** (participation in the labour market, skills, wages, quality of work). While political-strategic aspects are mainly dedicated to political debates and principles in models of democracy, the engagement of people and organizational issues refers to the organizational structures of governments, stakeholder issues, skills required by the participants, resource management, responsibilities and cooperation in democracy participation matters.

As it was stated by the DEMO-net experts, the implementation of principles of eDemocracy and eParticipation is possibly **affecting traditional democracy models**, which creates specific difficulties especially for new member states in their transition. From a socio-technological side it is quite essential to separate, when the engagement or participation of citizens begins and how to distinguish between policy participation and social participation.

It is necessary also to mention the **danger of political elitism** for new democracies, which could appear under existing forms of representative democracy. That is why the need for transparency of political and policy processes, identified by the DEMO-net stakeholder's workshop as a political challenge for Europe, could be especially urgent for new member states, including the Czech Republic. It is evident, that the work of different kind of communities, including research communities and NGOs, could enrich social dialogue about democratic values in order to reach shared European targets: open administration, freedom of information, inclusive government, etc. At the regional level it is essential, that while political-strategic aspects are mainly dedicated to political debates, principles and models of democracy and the engagement of people, and organizational issues refer to the organizational structures of regional governments, as well as stakeholder issues, skills required by the participants, resource management, responsibilities and cooperation in democratic participation matter.

EPMA, which was set by the Czech region of Vysocina and the BMI Association (NGO)⁶ is working in the DEMO-net project in cooperation with Czech experts from several Czech universities and from the public administration with the objective of defining the Value framework for eParticipation, at least for the regional level, in order to pick up forms and tools of eParticipation, relevant to the actual level of maturity of society. Our core research is to inspire the creation of a practical eParticipation typology, which will take into account several issues:

1. Maturity of civil society (factors such as: forms of democracy, national political environment, parties and their programmes, engagement of citizens in political life, role of communities – local and thematic, role of NGOs, openness of political representation).

⁶ www.epma.cz

2. Communication between governments and citizens (factors such as: strategies and tools for interaction at the national, regional and local levels of governance, conditions for fully interactive communication).
3. Stage or level of the information society (factors such as: main socio-economic indicators, national technological potential, ICT literacy of citizens, politicians and public administration staff, Internet penetration, PC and mobile equipment, and other indicators of the information society).

For the contemporary stage in this field in the Czech Republic, we presume that the use of eParticipation technologies is directly linked to the required and politically supported levels of interaction (communication) of governments and citizens, according to the level of maturity of civil society.⁷ For example, until now there was no political order to introduce mature eParticipation tools and technologies at some level of governance, and the interaction is mostly presented as “one-way” communication.

From the point of view of the interactivity, the majority of municipalities are only fulfilling their information duty according to the Act on Freedom of Information (Act No.106/Sb), which supports “one way communication”. The process of strengthening of the interaction side of the communication framework is going very slowly. The author could confirm this also through her own observations as a member of the evaluation team for the national competition of municipal web sites Golden Crest.

It should be noted however, that according to the results of sociological research, it is a very often the case, that Czech citizens have **no interest** in communicating with their public administration and remain passive. As the most frequent reason for their own passivity, people are mentioning lack of time and resources, but the opinion of analysts is different. They propose as the deeper reason for citizens’ passivity the hectic character of the society in transition, the very process of transformation from a “quiet” socialistic period into the demanding phase of competition in the capitalist society”⁸.

Speaking about eParticipation, we need to keep in mind the specific recommendations, outlined during different level discussions of eGovernment policy challenges, which highlight the need to create a permanent dialogue with all stakeholders for the better utilization of knowledge into regional practice. These include, on the content side: communicating research; shifting from a focus on operational research towards examination of the impact of eGovernment implementation, continuing to focus on public values, whilst also learning from other regions. In the eParticipation domain even more, than in the pure eGovernment area, it is necessary to reach a consensus between all members of the civil society: researchers (including multi-disciplinary integration), local and regional governmental organizations, businesses and citizens.

⁷ Hřebíček, J., Zálišová, I. (2006): Interoperability Framework of eGovernment in Environmental Information Exchange of the Czech Republic. Proceedings of 4th Eastern European e-Government Days 2006. April 2006, Prague

⁸ Alena Vaňhalová, SOCIOweb, webzine č.3, 2005

KNOWLEDGE TRANSFER IN E-GOVERNMENT

Dr. Roland Traunmüller

1. Knowledge Transfer and Innovation

Innovation in Government is in urgent demand, and therefore knowledge transfer on successful e-Government projects has attracted major attention in policy circles. There is a high interest in assessing model cases of projects, in using such good/best practice cases, in considering the feasibility of transfer, and in spurring an organizational learning process. Best/good Practice has become an often used word in the effort to build better e-Government solutions.

This paper is limited in scope. For a more extensive treatment, the reader is referred to the collected volume [12] edited by of this author. In that book various contributions highlight the theme knowledge transfer in e-Government from different points of view: case studies relate to developed and developing countries; analyses include the policies in diverse countries; model projects refer to various settings on national and international level.

2. Europe Gets a Vision on the Knowledge Society

There is a high interest in the greater context of European policies on the Information /Knowledge Society. The EU has established a vision and has started strategies for the Knowledge / Information Society in general and e-Government in particular. In terms of EU policy on the matter of the Information Society, the Lisbon agenda was the starting point. There was an initial phase starting in 2000 when the EU launched two Action Plans: eEurope 2002 [1] and eEurope 2005 [2] which generated a positive momentum for the short term development of the Information Society. The main focus in the initial stage has been to create the precursors for the development of the Information Society. For governments this meant that the main interest is on rapidly bringing online public services with readiness and availability.

At the mid-term progress was evaluated – known as the Kok report [3]. The reviews were critical and the Lisbon agenda was re-launched. The 2005 Spring European Council has set a new start, as well as new objectives named i2010. The three key objectives of the Information Society strategy i2010 are the following [4]:

- A Single European Information Space offering affordable and secure high bandwidth communications
- World class performance in research and innovation in ICT by closing the gap with Europe's leading competitors
- An Information Society that is inclusive, provides high quality public services and promotes quality of life

3. E-Government Action Plan

This general strategy was moulded in an eGovernment Action Plan [4]. According to these concepts under the name “Accelerating e-Government in Europe for the Benefit of All” the i2010 Government Action Plan was developed. The importance of a measurable impact of e-Government was stressed. In addition, the i2010 Government Action Plan defined five framing objectives:

1. *No citizen left behind*: advancing inclusion through e-Government so that by 2010 all citizens benefit from trusted, innovative services and easy access for all;
2. *Making efficiency and effectiveness a reality* – significantly contributing, by 2010, to high user satisfaction, transparency and accountability, a lighter administrative burden and efficiency gains;

3. *Implementing high-impact key services* for citizens and businesses -- by 2010, 100% of public procurement will be available electronically, with 50% actual usage, with agreement on cooperation on further high-impact online citizen services;
4. *Putting key enablers in place* -- enabling citizens and businesses to benefit, by 2010, from convenient, secure and interoperable authenticated access across Europe to public services;
5. *Strengthening participation and democratic decision-making* -- demonstrating, by 2010, tools for effective public debate and participation in democratic decision-making.

The literature on ICT for Government is vast and so a few citations follow as a general reference -- including the conference proceedings of the annual EGOV-Conference Series: [6], [7], [9], [10], [11], [12], [13], [14], [15].

4. Evaluation -- a Policy Goal Growing in Importance

In the above-mentioned objective of participation (item 5), the fact of a growing interest in public governance is mirrored. The reason is that a permanent e-Transformation of government has opened up entirely new ways for public governance. The term governance encompasses all governmental tasks such as jurisdiction, legislation and execution (administration). One could also refer to governance as: the whole scope of administrative action and the connected political processes.

Such a view which is a cybernetic feedback model of governing: the “control cycle”, includes democratic deliberation, policy formulation, citizen involvement, the execution of policies and evaluation. No wonder that particular issues have risen in appeal, as is the case with evaluating governmental work. Here one may note the ongoing interest in awards and rankings. In some way ideas from the 1960s are recalled and created by political cybernetics.

With a strong accent put on measuring, the issue of good/best practice has grown in importance. In the EU substantial work in evaluation has been performed. It has been handled mainly within competitions because competitions are a usual way to find high quality candidates, which can be used as a model. Just two examples suffice here: the Speyerer Quality Awards for German-speaking countries, and the eEurope Awards at the European level.

But the most famous competition in eGovernment is the latter one -- eEurope Awards¹, which took place in Como, Italy, in 2003², and in Manchester, United Kingdom, in 2005³. There was also an ongoing eEurope Award competition in Lisbon, Portugal⁴ in the fall of 2007. It has to be noted, that the aim of such competitions and awards exhibition is a broader one than connecting model cases. They are valuable for networking, motivation, awareness building and knowledge exchange.

5. Process and Criteria for Competitions

The eEurope Awards in eGovernment have been set to recognize innovative initiatives in the field of eGovernment and to promote good/best practice. The eEurope Awards were organized by EIPA⁵ and involved competition among several hundred cases. Best cases are identified by an independent panel of experts. So the 2005 competition required many remote evaluators, two consensus meetings reuniting a core jury quasi in conclave for some days and at the end a great event exhibiting fifty cases and declaring four winners. One of the authors has served in the expert team of both competitions.

¹ <http://www.e-europeawards.org/>

² <http://europa.eu.int/idabc/en/document/1469/330>

³ http://europa.eu.int/information_society/activities/egovernment_research/minconf2005/index_en.htm

⁴ <http://www.epractice.eu/index.php?page=fix&p=3&menu=2>

⁵ The European Institute of Public Administration in Maastricht

Such competitions need a lot of effort but are sure to get visibility and recognition. These projects are also selected for exhibition and presentation during a prestigious Ministerial e-Government Conference⁶. The following evaluation criteria were applied: innovation, effective management, real practical results, impact, relevance and transferability.

As for relevant criteria, the following facts earn high points: an innovative and ambitious approach to tackling a serious problem, an exemplary project development, accurate documentation, a sound engineering approach and compliance with significant e-Government-strategy goals.

As regards the aspect of “impact”, some features can be clearly identified and qualified or quantified. First to speak on a qualitative basis one has various features: accountability, openness, transparency and accessibility to services, provision of information to citizens, etc. Also special features such as improved quality of life for specific user groups merit high marks. Such groups may include the disabled, the elderly, the unemployed, minority groups, low-income households, the young, the rural population, etc. Then, there are also quantitative measures. So for external impact one has to cite up-take, user feedback and satisfaction, while the internal impact is given by factors such as resources, throughput, and claims statistics. Cost savings or having more time for clients stand for benefits realization.

6. Problems in the Application of Model Cases

Presenting case studies is only the starting point but here a big rift opens – there is a big gap between publicity and visibility in competitions and actual usage of the cases. However, even though the concepts under-lying good practice solutions can be copied, their implementation takes place in a certain context. The context is shaped by the prevailing forces and institutional traditions of a given administrative culture.

In transferring knowledge several problems can arise. The following four aspects find special attention and they are considered in the subsequent sections:

1. Selecting model project cases suitable for the project
2. Going ahead with organizational learning
3. Using several transfer mechanisms
4. Having a framework for insight in the feasibility of a project

7. Selecting Model Project Cases

Problems in selecting and using model cases occur. Some examples are:

- Information resources: First tapping the available information resources is necessary. Commonly, information comes as an abstract documentation such as information about existing projects. Examples are the eEurope Awards Competitions but also new practice compilation for e-Government established by the EU⁷. Here a word on the distinction between the notions Best Practice and Good Practice. Some say that only cases scrutinized in competitions deserve the adjective best; others are less strict. The authors think one can see this in a relaxed mode⁸.
- Selection of the right model project: This task is not an easy one, as users start with a bewildering diversity of cases. There are many successful projects and they cover a wide scope. Glossy descriptions may fool you, and quite often the decisive factors, which make a certain application a success in a certain project, are not communicated along with the official documentations. Especially, no feedback on problems is given as people are afraid of revealing their mistakes in a project.

⁶ Conferences on the eEurope Awards: 2003 Lake Como, 2005 Manchester.

⁷ http://europa.eu.int/information_society/activities/egovernment_research/gpf/cases/index_en.htm

⁸ “Best Practice” can be seen as a terminus technicus for cases noteworthy to be studied as examples. In that view the notion “Best” ceases to be a real superlative, it may not even be an elative: only just technical speaking and some politeness.

- **Transferability:** A model case is a project that provides a valuable and sufficiently detailed list of advice which can be given to others in e-Government. This criterion circles around the two questions: who can learn and what can be learned. Also differences in cultural, social and political backgrounds have to be considered in judging a model case.
- **A general limitation:** At this point a general caveat on the limits should be added – even having a broad basis of model projects is not necessarily helpful in every case. The reason is that looking at model cases is a backward-looking exercise; looking at the past, one may miss the needs of tomorrow. As an example, the authors list some emerging issues that they see as underrated in present projects: using multimedia for citizen contacts; supporting negotiation, consensus-building and group decisions; systems handling emergency cases.

8. Turning to Organizational Learning

This means transferring knowledge quickly and efficiently throughout the organization. Thus, knowledge is regarded as *quasi* flowing in a continuous act and the ensemble of knowledge workers is involved:

- *The conference as catalyst:* In any case – the awards event *per se* provides an excellent learning mechanism. Many experiences at the conference on shared learning arise around e-Government diverse matters. This learning situation includes the attendees, the finalists themselves and a wider audience of professional specialists.
- *Participation of staff:* Achieving a good project design needs an active and broad involvement of the relevant actors. An open mind is important as well.
- *More learning than replicating:* Mere transposition is likely to fail. Designing individual systems cannot be substituted by copying successful projects. So the feasibility of transferring is to be considered for each individual case. Ideally, a model case study shows that the underlying principles can be adapted by others, and may be used as inspiration and give a basis for further development.
- *Case studies spur learning:* Given these facts case studies act as a catalyst to bring in organizational learning. In *praxis* several modes of learning have to be blended comprising individual learning, learning by communication and the use of knowledge repositories.
- *Mere documentation will not suffice:* Personal expertise is sought after and the model case should offer some support. The capability of help and advice becomes important. Finally, the abstract concept of knowledge supply and demand may become concrete in personal working relationships. This is the case in such instances when mentoring is offered by experienced institutions.

9. A Range of Transfer Mechanisms

As a consequence of these considerations one sees that collections of model cases cannot be the unique transfer mechanism. It is important to supplement transfer with several other transfer means such as:

- *Knowledge transfer conferences*⁹: Here institutions with highly varying experience come together; transfer from institutions with mature experience to those with less experience is intended. Such outspoken transfer conferences have a particular agenda: case studies, good practice collections, policies and strategies for improvements.
- *Learning journeys:* They give participants the opportunity to explore first-hand innovative governmental programmes and their implementation – often in the form of organized on-site visits.
- *Vendor neutral transfer space:* Not to forget such activities as conventional professional seminars. They are very efficient if a well-defined particular topic has to be learnt such as a new IT-tool.

⁹ As an example the authors have organized the Eastern European e-Gov Days in cooperation with the Austrian Computer Society and Eastern European Partners (Eastern European e-Gov Days in Budapest and in Prague).

- *Involving facilitators and mentors*: Human experience is a key factor. Facilitators and mentors can act either in a group (virtual and face-to-face) or in the relationship of twinning projects.
- *Twinning projects*: This is a rather particular mechanism involving a special relation between two institutions. This creates an intensive learning situation with the more advanced one acting as mentor.

10. A Framework for Deliberating Feasibility

In assessing a proposed application project, a framework may help to deliberate the feasibility aspects. It puts a proposed system in the context of experiences gained from good practice. Here a list is given sketching some important factors of such a framework – for more details on the factors we refer to our paper [5].

Firstly, objectives come in: promoting the economy, providing Internet access, offering services to citizens, involving citizens in participation. The list continues with factors on strategies: Having a vision, change management, developing strategic thinking, adopting a holistic view, involving the stakeholders, cooperation with the actors. Further the main elements come under consideration: actors, design decisions, structures and resources, funding, technology, legal setting;

11. On Conclusion Two Citations

We will conclude with two citations first quoting the official report [8]: The cases submitted for the 2005 Awards demonstrate that:

- The momentum for the transformation of public services is still increasing;
- Re-organization is at least as important as new technology;
- It is important to make sure that citizens and businesses are benefiting; and
- Quantification of benefits is possible.

The Commissioner Viviane Redings opened the Manchester Conference with the following sentence: “We are starting to see benefits from Europe’s investments in e-Government over the last few years, but we need to be more active in learning lessons from each other and getting the benefits of scale from adopting common approaches across borders.”

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PART III: UNDESA'S ROLE IN KNOWLEDGE MANAGEMENT

UNDESA PROGRAMME ON ICT FOR DEVELOPMENT: THE ROLE OF GOVERNMENT

Ms Haiyan Qian

1. Technical Cooperation Projects

Ø Belize

Project title: Computerization of the Motor Vehicles Registry and Driver Licenses Issuing Procedures

Status: Ongoing

Timeframe: October 2005 – December 2008

The focus of this project is on the computerization of some of the key operations of the Department of Transport. The specific objective will be to address the needs of automating procedures related to the information management of driver license and vehicle registration. This objective will be achieved through the implementation of an online application in place of the current paper-based procedure used by district traffic offices to interact with their citizens, and deliver services that are responsive to their needs. The project will help the Government of Belize to tackle the following problems: the high levels of corruption among public officials working at district traffic offices, citizens' non-compliance with the payment of related fees, and the trafficking of vehicles illegally brought within its national borders.

Ø Jamaica

Project title: Web enabling of FINMAN for the Government of Jamaica

Status: Ongoing

Timeframe: October 2005 – December 2008

The Government of Jamaica is planning to transform the existing cash based accounting system into an accrual accounting system in order to better evaluate the cost of services and provide support to enable sound managerial decisions. In light of the above, a pilot project is underway using software (FINMAN) that allows accrual accounting and facilitates the sharing of financial information within public agencies. The focus of this project is the migration of FINMAN to a web based language and the identification and implementation of new services and functionalities. In addition, technical training sessions will be carried out, in order to ensure the overall sustainability of the project and related transfer of knowledge. This activity falls within the context of the general public sector reform process that the Government of Jamaica has initiated to enhance the efficiency and the effectiveness of public sector activities.

Ø Lesotho

Project title: E-government for Enhanced Service Delivery

Status: ongoing

Timeframe: March 2006-March 2008

The focus of this project is on the government to government (G to G) element of e-government. By ensuring that various departments within the Ministry of Communications, Science and Technology are using the same IT platform, greater synergies among the departments will occur, which in turn will increase productivity within the ministry. In addition, the majority of departments are currently working in isolation and, as a result, there is a duplication of servers, firewalls, Internet connections, etc. This project aims to interconnect the four locations of the ministry by means of a wireless solution. In addition, the project will deploy integrated databases, portals, servers, firewalls, and other security measures, as well as Internet access throughout the ministry.

In early August, a “kick-off” meeting will take place in Maseru, Lesotho after the signing of the UNDESA contract. An e-government study tour to the United Kingdom for key members of the Lesotho Government is planned for the middle of September 2007.

Ø **Morocco**

Project title: E-HR Management Project in the Public Administration of Morocco – First Phase

Status: Ongoing

Timeframe: July 2005 – December 2007

The focus of this project is to create an environment where the Ministry of Public Sector Management has the ability to effectively manage the career of all civil servants in the Government of Morocco. In particular, the project will address the lack of an integrated personnel and financial management system available to all ministries. It will also provide an assessment of the current HR management and IT situation, an e-HR Assessment, Requirements and Strategy, Pilot Implementation Guidelines, a Communication Strategy and an e-HR Management Prototype. Through the implementation of an e-HR Pilot Project involving the Ministry of Public Sector Management and the Ministry of Finance and Planning, as the two most advanced ministries in the field of HR management, the new e-HR Management System project will be gradually extended to all ministries.

The Government of Morocco and Almagora (the private sector partner) are in the final stages of developing a prototype for e-HR management for the Ministry. This prototype will be fully implemented in the second stage of the project.

Ø **Mozambique**

Project Title: Support to Public Sector Reform – UTERSP

Status: Complete

Timeframe: (2003 – 2006)

At the request of the Mozambique Government, UNDESA contracted a team of consultants that prepared the Mozambique e-Government Strategic Plan as one of the components of the above project. The strategic plan has been adopted by the government and it is currently being implemented. UNDESA also prepared a set of e-Government Guidelines for Ministry to help initiate the process.

UNDESA provides capacity building through the coaching and mentoring of government officials to assist them in identifying key elements of e-government strategic planning. The government had a number of e-government activities that were being implemented simultaneously without much interaction between them. UNDESA identified these activities and ensured that they would be integrated in the strategic plan.

Ø **Saint Vincent and the Grenadines**

Project title: Enhancing St. Vincent Government’s Official Web Site

Status: Completed

Timeframe: July 2005 - June 2007

The project’s deliverables were:

- § The conversion of the web site of the Government of Saint Vincent and the Grenadines into a web-portal. This met the main requirements and needs of a multi-channelled portal by providing information and services at the governmental, ministerial, and departmental levels, to citizens and businesses (G2B, G2C), and through the development of an e-learning component as part of the newly deployed portal.

- § The development and deployment of the following e-taxation applications, the online payment of taxes by civil servants, and the on-line registration service for the business names of individuals or companies.
- § The provision of a capacity building program deployed through working sessions, learning by doing, and through the use of an e-learning platform to develop the technical skills of both the developers and the final users.

The deployment of the new system resulted in a new organizational structure implying new roles and responsibilities for the people involved in the management of the newly developed system. As a result of the deployment of the portal, the government was able to provide online services to businesses and citizens, create interfaces and integration among data banks and functions of different administrative entities, develop a Reference Model that defines the e-government and information management systems for the Government of Saint Vincent and the Grenadines, and establish a platform to integrate future applications.

Ø *Saint Lucia*

Project title: Integrating St Lucia Information Systems

Status: Completed

Timeframe: July 2005 - July 2007

This project addressed the following problems: the inadequate integration of public administration operations that housed information on citizens, and the lack of a unique identification code for all resident citizens.

The project produced a feasibility study that analysed the current situation, defined operational solutions and guidelines for the upgrading of the existing procedures, integrated operations, and simplified processes across government agencies with reference to the needs of its citizens. The guidelines also transformed the way government agencies interact with their citizens and provided services in response to their needs.

The solution proposed in the study, was expected to create an Integrated Citizen Framework and a Service Desk that would enable citizens to access services more efficiently. In addition, the use of Open Source solutions, which guarantee a license free re-use and customization of market software components, was to enable the development of a re-usable infrastructure that could be redeployed in other islands with similar needs in terms of IT systems integration. As a result, Saint Lucia is in a position to play a leading role in the region as an innovator in the field of information systems integration, and to build local technical capacity and competencies required for the autonomous maintenance of the system, for its deployment elsewhere, and for the provision of advisory services to other islands.

Ø *Tunisia*

Project Title: Livre Blanc de L'administration Electronique

Status Complete

Timeframe: August 2003 – March 2006

At the request of the Prime Minister's Office, UNDESA prepared a "White Paper" that outlined the steps required to implement an e-government strategy. This "White Paper" was the result of two assessment missions, in which senior government members, private sector firms, NGOs, and academics were consulted. In addition to this "White Paper", UNDESA also prepared a study tour to Belgium for senior members of the government to see how a country similar in size and population as Tunisia, was able to successfully implement its e-government strategy.

The UNDESA “White Paper” was tabled at an inter-ministry forum and several recommendations were implemented. The World Bank has provided additional funds to the government to fully implement Tunisia’s e-government mission.

2. Publications and Reference Tools

Ø *UN Global e-Government Readiness Report (one of the top 10 DESA most visited online publications)*
Status: The 2008 Report will be published on 31 December 2007

The e-Government Readiness Survey assesses more than 50,000 features of the e-government web sites of the United Nations Member States to ascertain how ready governments are in employing the opportunities offered by ICT to improve the access to, and the use of, ICTs in the provision of basic social services.

Access to information and communication technologies is considered crucial for poverty reduction, since it contributes to new sources of income and employment for the poor, improved delivery of health and education services, and the competitiveness of the economy.

UNDESA has created an interactive Knowledge Base of global e-government information and data that captures time-series data from previous e-government surveys, so that governments and all members of civil society have easy access to this valuable information for research, education, and planning purposes.

Ø ***Compendium on e-Government Innovative Practices***
Status: Volumes I and II are published. V. III is under preparation

In light of the importance of e-government as a tool to meet the Millennium Development Goal, DPADM has created a Compendium of Innovative Practices in the area of e-government. In accordance with UNPAN’s mission to promote the sharing of knowledge, experience, and best practice among United Nations Member States, the Compendium provides an opportunity for governments to share their activities in e-government by highlighting their valuable experiences. The second version of the Compendium was published online in September 2006 and printed in hard copy in June 2007. It includes 200 cases from 57 different countries. The publication is highly appreciated by users who have increasingly downloaded Volumes 1 and 2 of the Compendium. These volumes have ranked for several months among the top ten most visited documents of the UNPAN portal.

Ø ***Compendium of ICT tools for m-Governance***
Status: The 1st issue will be published on 31 December 2007

The Compendium of ICT tools for m-Governance is a unique collection of modern Information and Communication Technologies used directly by, or in partnership with, governments or governmental institutions around the world to support their administration and public service, and to address governance challenges. The current volume of the compendium focuses on software products and applications developed mainly in developing countries for m-education and m-health.

Ø ***UNPAN Online Training Centre***
Status: Ongoing

The highly popular online training course, E-Government: What a Government Leader Should Know, was first made available to UNPAN users in September 2005. The course is divided into three parts and provides background knowledge on ICT development and e-government related basic concepts, describes fundamental infrastructures that are required for the success of e-government development, and discusses high-level concerns on e-government sustainable development.

The course has been well received. Ninety percent of participants found the course material to be very relevant to their daily tasks. Participants also reported that the content is very useful for government officials and particularly relevant to those involved in e-government projects, especially in developing countries.

Since September 2005, over 1300 have registered for the online course with enrolment numbers steadily increasing each time the course has been on offer. Winter 2007 saw enrolments increase by sixty percent and the number of successful completions increase by eighty percent. A wide range of occupations are represented by the learner group with reference to organizations and levels. Participants have included CEOs, ICT experts, consultants, programme managers, e-government coordinators of country offices, and technical directors. Of these participants, eighty-six percent were from developing countries, with the highest number of registrations from India and Nigeria.

Ø **METER 2**

Status: Ongoing

The objective of METER, as a ready-to-use interactive tool, is to help governments to monitor, refine, and improve the context driving the emergence, or the further fostering, of e-government. Within the four main areas (i.e. building blocks) key to building the enabling environment (i.e., organizational issues, policy requirements, legal and regulatory framework governing ICT, and e-leadership), the tool identifies essential factors, choices, and dilemmas likely to determine the public sector's capacity to effectively harness technology as an enabling force for renewal and leadership. The tool then becomes a type of check list of key issues that need to be addressed in the four areas and aims to assist policy makers in selecting where to direct the efforts intended to spur e-government development. By addressing these issues, policy makers either become aware of specific issues new to them, or realize the importance of certain topics they had not previously considered as essential. Finally, the tool aims to explore possible alternatives to tackle the specific issues.

3. E-Government Meetings and Training Workshops and the related Analytical Reports

Ø ***E-Access for All***

Bangalore, India

8–9 February 2007

A number of countries have made strides in bridging the digital divide. UNDESA and the Government of Karnataka, India jointly sponsored a two-day workshop to take advantage of these successful initiatives and to share their respective experiences and current thinking on improving e-access.

The meeting tackled issues such as economic and social equity, social mobility, economic growth, democratic engagement, infrastructure development, and open and free source applications within the context of e-government. It identified seven lines of actions that should be undertaken by countries to effectively implement e-government solutions and e-access for all. The full report along with the presentations of the meeting are available on the UNPAN portal.

Ø ***E-participation and E-government: Understanding the Present and Creating the Future***

Budapest, Hungary

27 – 28 July 2006

UNDESA organized a meeting on e-participation and e-government at the “International E-Participation and Local Democracy Symposium” in Budapest, Hungary. The meeting reviewed and analysed approaches and practices in understanding what constitutes e-government and how to characterize e-

participation in order to assess issues and challenges facing developed and developing countries as they advance at their respective pace towards implementing a people-centred government.

The meeting examined the issues of: what constitutes e-participation and e-government readiness; what existing models are available to measure e-participation and e-government readiness, and how these models could be enhanced and/or adapted by other countries. The full report along with the presentations of the meeting are available on the UNPAN portal.

Ø ***Bi-annual Forum on City Informatization in the Asia-Pacific Region***
Shanghai, People Republic of China, 18 - 19 October 2007

This high-level forum provided a platform for policy and decision makers of municipal governments in the region to exchange their views, strategic plans, and experiences in the development of the information industry and the application of information technology, as well as to promote inter-country, regional and international cooperation, particularly south-south cooperation.

The theme of the forum was “ICT for a Better Life: The Role of Local Government”. Senior government officials had the opportunity to share experiences and current thinking on innovation for public services in the following areas: better public service delivery; better connectivity and access for all; better business and development; and better participation and citizen engagement.

Ø ***Managing Knowledge to Build Trust in Government***
Vienna, Austria
28 – 29 June 2007

The workshop was jointly organized by UNDESA in partnership with the Ministry of Government Administration and Home Affairs (MOGAHA) of the Republic of Korea and the International Institute of Administrative Sciences (IIAS). The workshop’s objective was to encourage discussion on promising approaches and key issues that need to be addressed to promote effective knowledge management (KM) within government, with particular emphasis on the overall theme of the forum, which was to build trust in government.

The workshop confirmed that the major challenge facing KM implementation is not a technological one but requires the development of a common culture of modernization of public administration. The solution is to use a problem solving approach rather than the mere technological implementation of a portal. The key objective of a knowledge based administration is to focus on achievements of the goals of government’s agencies and improvements in the quality of processes and services to citizens that incorporate citizen input.

UNDESA’s activities and the knowledge base, especially provided by the UNPAN¹ portal to store the results of the framework and examples of best practice that have been put in place by a number of countries, greatly facilitate the development of KM capacities of developing countries. The Republic of Korea’s proposal to establish a Global Community of Practice to build a systematic foundation for global cooperation is another step forward in the sharing of knowledge on KM practices.

¹ United Nations Public Administration Online Network

Ø ***Ambassadors' Briefing on "Success, Failure and Management of e-Government Initiatives"***

Geneva, Switzerland

23 May 2007

UNDESA held a briefing for ambassadors and other senior members of government on the theme "Success, Failure and Management of e-Government Initiatives". In the morning session, Harvard Professor, Jerry Mechling, made a presentation on "The Framework for Successful e-Governance: dos and don'ts". The participants exchanged their opinions on the proposed framework and agreed on its usefulness.

The afternoon session focused on the plight of developing countries in their respective efforts to bridge the digital divide. Minister Thompson of St. Vincent and the Grenadines spoke on how the least developed countries could leapfrog the digital divide and Counselor Gatti of Italy spoke on how developing countries could fill their current e-government gaps.

4. Global Networks on E-governance

Ø ***UNPAN***

The United Nations Public Administration Network (UNPAN), is developed and managed by the Division for Public Administration and Development Management of UNDESA in partnership with relevant international and regional institutions worldwide. It serves as a global portal for public administration, and is the only network of its kind in the world today. Its main objectives are to build capacity, bridge the digital divide between the rich and the poor, promote south-south cooperation, and to access, process, and disseminate relevant information through up-to-date ICTs for the promotion of better public administration. The 7th Interregional Consultative Meeting of UNPAN was held on 25 June 2007 in Vienna, Austria, with the participation of the heads and representatives of 20 UNPAN partner organizations. The main purpose of this meeting was to discuss progress since May 2004 and to plan future activities. At this meeting, UNDESA announced that UNPAN will be updating its web portal and received constructive suggestions and feedback from its members. The 5th UNPAN Training on ICT-supported Knowledge Management was held in Seoul, the Republic of Korea in October 2007, during which UNPAN members were trained on the new features of the UNPAN portal.

Ø ***World Summit on Information Society (WSIS): Facilitation Meeting for Action lines C1 and C7-eGov.***

Geneva, Switzerland, May 2006 and 2007

In May 2006, UNDESA facilitated the first Multi-stakeholders Facilitation Meeting on implementing the WSIS outcomes related to Action Lines C1, "The role of public governance authorities and all stakeholders in the promotion of ICTs for development" and C7, "ICT applications - E-government". The objective of the meetings was to exchange information and discuss possible cooperation modalities among stakeholders for the implementation of the specific action lines. As a result of the consultation among the members of the network, a series of thematic subgroups were established under each action line. In May 2007, UNDESA convened the Second Facilitation Meeting to take stock of the progress made in 2006 by all stakeholders in relation to Action Lines C1 and C7, and to identify promising approaches and key issues to be addressed for future implementation. The Second Facilitation Meeting also led to the identification of a focal point for each of the subgroups previously established. The role of the focal points is to formalize and guide the work of the sub-groups in-between the formal sessions.

Ø *Community of Experts on e-Governance – Global Alliance for ICT and Development (GAID)*

The Millennium Declaration of 2000 and the Outcome of the 2005 World Summit established a clear set of internationally agreed development goals. The WSIS forged a global consensus on the importance of ICTs as tools for achieving these development goals. On 28 March 2006, the UN Secretary-General approved the establishment of the Global Alliance for ICT and Development (GAID). Its mission is to contribute to transforming the spirit and vision of the WSIS into action and promoting the use of ICTs to successfully realize the above mentioned goals.

The Community of Experts on e-Governance led by DPADM/UNDESA has been established to support this endeavour. It will act as a global knowledge broker on e-governance by facilitating access to information and knowledge on ICTs for development, by identifying opportunities for multi-stakeholder partnerships, and by mobilizing resources.

ANNEXES

I. Agenda

**7th Global Forum on Reinventing Government:
Building Trust in Government
Vienna, Austria
26 – 29 June 2007**

**PRELIMINARY AGENDA
WORKSHOP ON MANAGING KNOWLEDGE
TO BUILD TRUST IN GOVERNMENT**



UNITED NATIONS

NATIONS UNIES

**DIVISION FOR PUBLIC ADMINISTRATION AND DEVELOPMENT MANAGEMENT
DEPARTMENT OF ECONOMIC AND SOCIAL AFFAIRS**



Workshop organized by the United Nations Department of Economic and Social Affairs (UNDESA) in partnership with the Ministry of Government Administration and Home Affairs of the Republic of Korea (MOGAHA) and the Dubai School of Government

Thursday, 28 June 2007

DAY ONE - Hall E2

- 8:45 – 9:00 Registration for the Workshop**
- 9:00 – 9:20 Welcome address**
Mr. Guido Bertucci, Director, Division for Public Administration and Development Management/United Nations Department of Economic and Social Affairs (DPADM/UNDESA) (Speech)

Dr. Nam-Joon Chung, Assistant Minister, Headquarters for Government Innovation, Ministry of Government Administration and Home Affairs, Republic of Korea (Speech)

Mr. Nabil Ali Alyousuf, Director General of the Executive Office of His Highness Sheikh Mohammed Bin Rashid, Ruler of Dubai and UAE Prime Minister and Chairman of the Dubai School of Government
- Introduction of Participants and Themes and Working Procedures**
Ms. Haiyan Qian, Chief, Knowledge Management Branch, DPADM/UNDESA, and **Chairperson** for the Opening Session
- 9:20 – 9:30 Presentation: Overview of Knowledge Management in the Public Sector**
Mrs. Yum HuiYuen, Deputy Director, Institute of Systems Science, National University of Singapore (Paper) (Presentation)
- 9:30 – 12:30 Session I: Enabling Environment Issues**

Chairperson: *H.E. Mr. Francis Lorenzo*, Ambassador, Permanent Mission of the Dominican Republic to the United Nations
- 9:30 – 10:00 Sub-theme 1: Institutional and Regulatory Framework Issues**
Speakers: - *Dr. Magued Osman*, Chairman, Information and Decision Support Center, Egyptian Cabinet, Egypt (Paper)
- *Mr. Alexander Kouzmin*, Adjunct Professor, University of South Australia and Professor of Management, Southern Cross University, Australia (Paper)
- 10:00 – 10:45 Sub-theme 2: IT Infrastructure and Interoperability Issues**
Speakers: - *Mr. Randy Ramusack*, United Nations Technology & Policy Adviser, Microsoft Corporation (Paper)
- *Mr. Martin Stewart-Weeks*, Director, Public Sector (Asia-Pacific), Internet Business Solutions Group, Cisco Systems, Inc. (Paper) (Presentation)
- *Dr. Gregoris Mentzas*, Professor, Director, Information Management Unit, Institute of Communication and Computer Systems, School of Electrical & Computer Engineering, National Technical University of Athens, Greece (Paper) (Presentation)

10:45 – 11:00 Break for coffee and tea

Chairperson: *Mr. David Broster*, Head of Unit, eGovernment and CIP Operations, European Commission

11:00 – 11:30 Sub-theme 3: Leadership and Managerial Issues

Speakers: - *Professor Bhatnagar Subhash*, Indian Institute of Management, Ahmedabad, India (Paper) (Presentation)
- *Dr. Theresa A. Pardo*, Deputy Director, Center for Technology in Government, University at Albany, SUNY, USA (Paper) (Presentation)

11:30 – 12:00 Sub-theme 4: Human Resources Issues

Speakers: - *Mr. Christopher Harman*, Public Sector Management Practitioner and Author, United Kingdom (Paper) (Presentation)
- *Dr. Zabeda Abdul Hamid*, Assistant Professor, Department of Business Administration, Faculty of Economics and Management Sciences, International Islamic University, Malaysia (Paper) (Presentation)

12:00 – 12:30 Sub-theme 5: Funding and Financial Issues

Speakers: - *Mr. Hongren Zhou*, Vice Chairman, Advisory Committee for State Information; Chairman, Experts Committee for Informatization, Shanghai; Director-General, SIECC, Shanghai Consulting Center for the Internet Economy, People's Republic of China (Paper) (Presentation)
- *Dr. Jeffrey Roy*, Associate Professor, School of Public Administration, Dalhousie University, Canada (Paper) (Presentation)

12:30 – 14:00 Break for lunch

14:00 – 15:30 Open discussion on Session I

15:30 – 16:00 Break for coffee and tea

16:00 – 17:30 Session II: Case Studies and Lessons Learned

Chairperson: *Professor Dongwook Kim*, Associate Dean and Professor, Graduate School of Public Administration, Seoul National University

Speakers: - *Dr. Yasar Jarrar*, Executive Dean, Dubai School of Government, Dubai, UAE (Paper)
- *Dr. Nam-Joon Chung*, Assistant Minister, Headquarters for Government Innovation, Ministry of Government Administration and Home Affairs, Republic of Korea (Paper) (Presentation)
- *Dr. Ai Viet Nguyen*, Deputy Director-General, Standing Office of National Steering Committee on Information Technology, Ministry of Posts and Telematics, Viet Nam (Paper)
- *Professor Fanie Cloete*, Professor of Policy Analysis, School of Public Management & Planning; Associate Dean, Economic & Management Sciences, Stellenbosch University, South Africa (Paper)
- *Mr. Abraham Sotelo Nava*, Head of e-Government and Information Technology Policy, Secretariat of Public Administration, Mexico (Paper)

Friday, 29 June 2007

DAY TWO - Hall E2

9:00 – 10:30 Continuation of Session II: Case Studies and Lessons Learned

Chairperson: *Mr. Nabil Ali Alyousuf*, Director General of the Executive Office of His Highness Sheikh Mohammed Bin Rashid, Ruler of Dubai and UAE Prime Minister and Chairman of the Dubai School of Government

Speakers:

- *Mr. Danilo Oreste Broggi*, Chief Executive Officer Consip SPA – Italy (Paper) (Presentation)
- *Dr. Peter Knight*, Coordinator, e-Brasil Project, Federative Republic of Brazil (Paper) (Presentation)
- *Dr. Sun-Bin Kim*, Chief Researcher, Public Policy Research Division, Samsung Economic Research Institute, Republic of Korea (Paper) (Presentation)
- *Dr. Irina Zalisova*, Director, EPMA (European Projects and Management), Czech Republic (Paper)
- *Dr. Roland Traunmüller*, Professor Emeritus with the Institute of Informatics in Business and Government, Johannes Kepler University, Linz, Republic of Austria (Paper only)

10:30 – 11:00 Break for coffee and tea

11:00 – 11:45 Open discussion on Session II

11:45 – 12:15 Session III: UNDESA's Role in Knowledge Management in Government

Chairperson: *Ms. Haiyan Qian*, Chief, Knowledge Management Branch, DPADM/UNDESA

Introduction of the Current Work and Future Planning

Ms. Haiyan Qian, Chief, Knowledge Management Branch, DPADM/UNDESA (Presentation)

Open discussion

12:15 – 12:30 Summing Up of the Discussion

Dr. Yasar Jarrar, Executive Dean, Dubai School of Government, Dubai, UAE (Presentation)

12:30 – 14:00 Break for lunch

14:00 - 16:00 Report to the Plenary Session

II. Aide-Memoire

UNITED NATIONS



NATIONS UNIES

Division for Public Administration and Development Management
Department of Economic and Social Affairs

AIDE MEMOIRE
EXPERT GROUP MEETING ON MANAGING KNOWLEDGE
TO BUILD TRUST IN GOVERNMENT

Vienna, Austria
26 – 29 June 2007

BACKGROUND

This aide-memoire outlines the organization of the EGM on *Managing Knowledge to Build Trust in Government*. The EGM is being organized during the 7th Global Forum in order to benefit from many participants already there and logistical support.

The 7th Global Forum on Reinventing Government will take place at United Nations Office in Vienna from 26 to 29 June 2007 on the theme of “Building Trust in Government.” It will offer plenary sessions and a series of parallel capacity development workshops on different aspects of revitalizing governance and public administration to build trust in Government. Participants will include ministers, senior government officials, parliamentarians, mayors, civil society representatives, and the private sector.

The event will be organized as part of a UN system wide partnership, led by the United Nations Department of Economic and Social Affairs (UNDESA). While the United Nations will organize the plenary sessions, seven parallel capacity development workshops will be organized by the UN and members of the Institutional Partners Group (IPG).

In a world where technological and social change are occurring at a rapid pace, public officials are becoming increasingly autonomous in taking and implementing decisions, and as a trade-off, they, as well as the agencies that they manage are supposed to be more accountable to the state organization and to society.

Increased accountability can be achieved through the combination of the classical mechanisms of administrative supervision and auditing, and the more recent methods of results-based management, through managed competition for excellence, and through the use of social accountability mechanisms. Increased accountability can also be additionally achieved through the adoption of a full transparency policy, which involves the extensive use of ICTs. Increased efficiency, as well as increased participation, can also be achieved through the adoption of ICTs.

Throughout the world today, however, including both in developed and developing countries, there has been a significant decline in public trust in government. Building trust is the foundation of good

governance. It is therefore critical to find ways of alleviating this declining public trust in government. There are several governance and institutional components that promote trust. The effective management of knowledge is one such component.

RELEVANCE OF KNOWLEDGE MANAGEMENT IN BUILDING TRUST IN GOVERNMENT

Improved KM is essential to governmental agencies at the federal, regional or local levels, because governmental organizations are basically knowledge-based organizations. The authority of governments has often been based on a monopoly of production and knowledge. Governments are now required to systematically scan the environment for knowledge about tools and techniques used by the frontrunners in knowledge management. The public sector has traditionally had a capacity to bring together the public and private sectors, as well as different strata of society to share knowledge about policy issues or about service delivery. The question is thus not whether governments have ever managed knowledge or whether they should, but rather how they can improve their practices to better adapt to the new knowledge-intensive economy, in the process, building trust in government.

What should be the main objectives of KM in government?

There is little doubt that the increasing importance of knowledge in policy-making and service delivery can help improve governance in the public sector by increasing the knowledge base and transparency of public activities. Increased transparency of public activities can result in building trust in government. This will affect institutional arrangements as well as relations between providers of knowledge and decision-makers.

Knowledge must be managed effectively in an effort to ensure that the basic objectives of governmental organizations are attained to the greatest extent possible. Effective KM must ensure sufficient internal and external transparency and help individual governmental employees in an organization to locate what they need, while building public trust.

The ultimate objective of KM is to maximize productivity in the public sector, while enhancing public service delivery. More specific objectives of KM include:

- Reducing overall costs while providing a quick return on investments made to install KM systems;
- Reducing processing time;
- Reducing storage;
- Improving internal workflow;
- Improving service to the public and providing faster service through immediate online access to records;
- Enable sharing of recorder's information with other governmental agencies;
- Improving control and management of records, allowing for parallel processing and simultaneous access to documents;
- Providing better supervisory control tools to manage work;
- Providing advanced technology worker tools;
- Prioritizing work;
- Improving worker morale by eliminating or reducing backlogs while recognizing quality performance;
- Reducing training time;
- Improving document security.

What are the main challenges of KM in government?

KM is essential to government at any level, federal, state, or local. It has become increasingly apparent that in order to enhance public satisfaction, in the effort to build trust in government, governmental organizations face a major challenge, not just in labour or capital management, but in the ability to manage effectively their employees' knowledge, based on ICT-led processes. The rapidly growing importance of knowledge is highlighted by the fact that many governmental organizations now attempt to organize and to make available the relevant collective knowledge of their employees by building an organizational knowledge repository. Governmental organizations face a number of other more specific challenges which demand effective and innovative KM, including the following:

- The sheer volume of records any governmental organization processes;
- The need to keep those records accessible over a long period of time;
- The need to provide for public access to records. A paper-based system poses a daunting challenge to public access of government records;
- The need to still deal with paper, since not everyone files their taxes online, or renews their driver's license over the Internet;
- The need to keep documents secure is paramount when dealing with government records.

Challenges and opportunities of using ICTs to manage knowledge in government

The world in the 21st century is witnessing a quantum leap in the development and exploitation of ICTs, with corresponding ramifications for social and economic organization, the environment, culture and the development of a global information infrastructure. The key issues of concern to policy-makers and international organizations are the extent to which this major transformation is helping to build and restore trust in government, whether this transformation is benefiting all aspects of society, as well as different groups within the society, and the ways and means of achieving a truly global information infrastructure.

Governments are struggling with how to manage the networked society, both from the point of view of putting in place structures and institutions that will help adjustments to change but also to increase the flow of this knowledge. The use of Information and Communication Technologies (ICTs) becomes a critical investment as witnessed by the sums of funding now going into this transformational technology. But the investment in e-things is a necessary though not sufficient condition for ensuring effective use of knowledge for development. A challenge for many governments, and particularly those of the developing countries, given a willingness to connect, is to create the conditions that will ensure their participation in the global pool of knowledge production in order to strengthen their capacities for decision-making. Such an effort may entail institutional restructuring in many areas of the private and public sectors in order to ensure that policies and strategies are linked to broader development goals.

There are two basic levels that underlie the development of knowledge-based development – infrastructure, and skills. Infrastructure is basically the size and growth of the telecommunications network. Telephone networks provide a broad base for building other types of infrastructure, such as data communication networks. Skills are basically the literacy level of a country, and its stock of graduates with technical degrees in engineering, mathematics, and computer sciences.

Horizontal and vertical collaboration between agencies is critical in effective service delivery. One of the major problems in KM is connecting multiple agencies and making provisions for horizontal and vertical collaboration between agencies at all levels.

Institutional alignment is also critical in effective service delivery. Effective KM necessitates that bureaucratic divisions be opened up to promote horizontal knowledge-sharing, and the adaptation of organizational capital, i.e. databases, Internets, intranets, and knowledge central coordinating units. The creation of organization wide “who knows what” directories, referred to as “yellow pages”, allows people who need information to locate and get in contact with those who have it.

Information quality is critical to service delivery. With the volumes of data and demands for information growing at an exponential rate, the information quality challenge is becoming an increasingly critical one for governments and businesses alike to address creatively. Vital information on citizens often exists in several locations, on different systems that evolved over time with little proactive management. The problem is compounded when processes and controls to ensure data is captured consistently and accurately at source are not defined, set up and enforced. Central versus local control is a related issue.

Creating “communities of practice” is equally critical to service delivery. One of the basic notions in KM is connecting the “silos”. Silo is used in KM as a metaphor for the self-contained organizational unit, into which stuff gets dumped in and taken out, but which has little or no communication with the other silos (products, regions, divisions, units, etc. that constitute the organization. The solution to the silo problem is to create “communities of practice” or ‘communities of learning’.

Confidentiality, integrity, and availability issues. The value of an organization’s assets relies on three cornerstones: confidentiality, integrity, and availability. Confidentiality deals with the unintentional disclosure of information outside of a pertinent authority. Integrity assures the organization of the trustworthiness of the information. Availability ensures that the service or data product is accessible for requests from authenticated clients. Security policies define the nature of what is considered to be a secure state. The ability of the Internet to allow clients access to a wide variety of information has introduced a number of vulnerabilities to services offered via this mechanism. Mechanisms can be put into place to address security concerns.

Electronic Content Management issues. A subset of KM is ECM, Electronic Content Management, which is the realization that organizations typically have numerous and frequently non-interfacing and incompatible systems to manage electronic information.

New information requires innovation. Since new information often requires innovation, the management of innovation is important in governmental organizations. Innovation is an ongoing process in which organizations create problems, define them, and then develop new knowledge for their solutions. Successful governmental organizations are those that consistently create new knowledge as solutions to unfamiliar problems, disseminate it widely throughout the organization, and quickly embody it in new technologies and products.

More importantly, deducing from the above, the main challenge of deploying efficiently ICTs for effective KM is how to develop human resource strategies that leverage human-intellectual capital within organizations, and for the dissemination and sharing of important information that promotes creativity and innovation within and between employees. If the repository for intellectual property is a patent or copyright, the repository for knowledge is the information worker.

Governmental organizations that spend millions implementing and integrating complex IT infrastructures should not forget the corresponding investments in people. Inability to change employee behaviour, internal resistance to changing business processes, or lack of adequate worker training are probably the most significant obstacles to improving productivity through IT applications. There is therefore an overriding need for Governments at all levels to invest in organization and management so information workers can realize their potential.

The role of the public sector is very important in supporting new forms of market facilitation, introducing effective regulation, and providing public services appropriate to national or local conditions. Public sector strategies also need to focus on the difficulties of using ICTs to transform data and information into useful knowledge. Regulatory frameworks must ensure that understanding, sharing, and partnership-building are central components of national ICT strategies. The public sector needs to also recognize that opportunities for using ICTs creatively require technical and human capabilities that are built up through experience with the new technologies and services. The public sector can therefore identify and fill important gaps in the institutional frameworks in which learning occurs, never losing sight of the fact that benefiting from ICTs requires managerial quality and leadership, flexible and multi-skilled labour, and institutional learning and experimentation.

KM and trust in governments in lesser developed countries

The complex relationship between KM and building trust in government is aggravated by certain conditions that prevail specifically in lesser developed countries. These conditions include in the words of Yehezkel Dror, the fact that “...*(n)ot only are many countries faced by momentous choices, but they do so under conditions of multiple adversity, such as uncertainty in respect to critical factors, overload with many pressing issues, hard-to-analyse interdependencies between different decision agenda items, harsh domestic political constraints, and overriding economic scarcity.*”. These aggravating conditions in many lesser developed nations sometimes require different approaches and strategies than would be appropriate in more developed countries. This is especially relevant in the context of the application of democratic principles and the technologies of the information society. Issues like democratization, the so-called digital divide, access to knowledge and knowledge instruments like ICTs, effectiveness of ICTs (basic reliable electricity supplies, networks, electronic literacy, broadband, etc), might differ significantly between these regions. Lesser developed nations have simultaneously more basic and more complex problems to deal with in this regard. More appropriate strategies to deal with these problems should be considered.

ISSUES TO BE ADDRESSED

In light of the issues raised above, the EGM intends to provide a platform for discussion and elaboration of these issues, and will be composed of three sessions.

Session 1 on Enabling Environment Issues will be devoted to overview concepts on KM, including enabling environment issues, such as leadership and managerial issues; institutional and regulatory framework issues; IT infrastructure connectivity and systems issues; human resources issues that leverage human-intellectual capital within governmental organizations, including the dissemination and sharing of important information that promotes creativity and innovation within and between employees; and funding and other financial issues.

Session 2 on Case Studies and Lessons Learned will be devoted to seeking good practices and common lessons learned from international and country experiences in setting up IT systems for e-government development, and drawing on case studies on the development of government integrated ICT led knowledge management.

Session 3 on UNDESA'S Role in KM in Government will outline the key issues that the future work of UNDESA should focus on in terms of assisting countries in the development of institutional and policy frameworks to enable countries to build and enhance existing ICT-led KM capacities in government. Such work may involve analytical tools, best practices, technical cooperation and specialized training frameworks.

The EGM will be broken into six 1.5 hour discussion sessions each of which will be punctuated by a short break. Each session will discuss a new sub-theme within the overall EGM theme. To kick off the discussions, short presentations and comments will be made by key resource people. Then, a moderated discussion will be opened to the floor. A reporter will be designated to record the discussions and he or she will have nine minutes to present the key policy messages to the 7th Global Forum Wrap-up Plenary Session.

EXPECTED OUTPUTS

It is envisaged that the EGM will provide an arena for discussion among the individual key experts and practitioners from governmental organizations, non-governmental organizations, academic institutions, and business communities at the international, regional and local levels on the pertinent issues relating to the role of managing knowledge in government.

It is also envisaged that an international consultant/expert will be hired to work with UNDESA to prepare a concept background paper and a publication summarizing the proceedings and the main outcome of the EGM, which will contain policy options and training guidelines and strategies as the output of the meeting for interested member states.

TIME AND VENUE

The EGM will be held at United Nations Office in Vienna from 26 to 29 June within the framework of the 7th Global Forum on Reinventing Government: Building Trust in Government.

WORKING LANGUAGE

English.

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http://www.unpan.org/directory/conference/commonuser/browseoneconference.asp?conference_id=2024

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